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Article

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Kergueleniidae fam. nov. (Crustacea: Amphipoda: Lysianassoidea) in Australian waters

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Abstract

The new lysianassoid amphipod family Kergueleniidae is established and the genera *Clepidecrella* and *Kerguelenia* are reported from Australian waters for the first time. Nine new species are described: *Clepidecrella abeona* **sp. nov.**, *C. cataraqui* **sp. nov.**, *C. colliboi* **sp. nov.**, *C. ira* **sp. nov.**, *Kerguelenia euroka* **sp. nov.,** *K. kanowna* **sp. nov.**, *K. kawatiri* **sp. nov.**, *K. leura* **sp. nov.** and *K. matilda* **sp. nov.** Keys are given to all species of each genus.

Key words: Crustacea, Amphipoda, Lysianassoidea, Kergueleniidae, *Clepidecrella, Kerguelenia*, Australia, taxonomy, new family, new species

Introduction

The new family Kergueleniidae contains two genera and 26 species distributed mainly in antitropical seas worldwide from depths of 10 m to 5041 m. They have not previously been reported from Australian waters, although three species (*Clepidecrella tropicalis* Lowry & Stoddart, 1994, *Kerguelenia koutoumo* Lowry & Stoddart, 1994 and *K. lifou* Lowry & Stoddart, 1994) are known from New Caledonia.

Kergueleniids are a group of lysianassoids where the mouthparts have become so reduced that their relationship with other lysianassoid family-level groups cannot be determined. The setal-tooth arrangement of maxilla 1 is reminiscent of lysianassid amphipods, but the mandible is highly distinctive with a very large palp and a vestigial to absent molar and incisor. The inner and outer plates of the maxilliped are always reduced. Although kergueleniids have reduced mouthparts they have never been reported in association with other animals, unlike for example, *Euonyx* (see Stoddart & Lowry 1989) and the opisids (see Lowry & Stoddart 2010), and nothing is known of their life-style.

De Broyer (1985: 306) recognised the "kerguelenidiens" as a possible monophyletic group and later referred to them as the "Kergueleniid Group" (De Broyer *et al*. 2007). In this paper we establish the Kergueleniidae and describe four new species of *Clepidecrella* and five new species of *Kerguelenia*, all from south-eastern Australia.

Material and methods

The descriptions were generated from a DELTA database (Dallwitz 2005) to the kergueleniid species of the world. The **bold** parts of the descriptions are diagnostic characters which distinguish each taxon in at least two respects from every other taxon. Material is lodged in the Australian Museum, Sydney (AM) and Museum Victoria, Melbourne (MV). Standard abbreviations on the plates are: A, antenna; G, gnathopod; MD, mandible; MP, maxilliped; MX, maxilla; P, pereopod; T, telson; U, uropod.

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Kergueleniidae fam. nov.

Diagnostic description. *Head* exposed, slightly longer than deep. *Antennae* calceoli absent. *Antenna 1* with callynophore in male; accessory flagellum article 1 not forming a cap. *Antenna 2* peduncular article 3 without distal hook. *Epistome and upper lip* fused. *Mouthpart bundle* subquadrate. ***Mandible*** **incisors vestigial or absent**; left lacinia mobilis peg-like or absent, right lacinia mobilis absent; accessory setal row absent; **molar vestigial or absent**; **palp inserted distally to extremely distally**. *Maxilla 1* inner plate with 2 or less apical setae; outer plate with 2 to 6 setal-teeth; palp large, 2-articulate, with or without apical robust setae, without subterminal lateral notch. *Maxilla 2* inner plate significantly shorter than outer plate, without oblique row of facial setae. *Maxilliped* inner plate small; outer plate small, about as long as palp article 1, with medial and apical setae reduced or absent; palp 4-articulate, articles 3 and 4 long, slender.

Gnathopod 1 **simple**; coxa large, about as long as coxa 2; merus and carpus not rotated; ischium short, long or very long; carpus and propodus long, slender; dactylus straight or slightly curved, becoming filiform. *Gnathopod 2* coxa large, subequal in size to coxa 3; carpus rectolinear or rectangular, with palmate setae; propodus rectangular, with palmate setae; dactylus minute. *Pereopods* all simple; distal spurs absent. *Pereopod 4* coxa with very well developed posteroventral lobe. *Pereopod 5* coxa with posteroventral lobe. *Pereopod 6* coxa posterior lobe absent.

Uropod 2 inner ramus without constriction. *Uropod 3* biramous, uniramous or rami absent. *Telson* entire.

Type genus. *Kerguelenia* Stebbing, 1888.

Generic composition. *Clepidecrella* J.L. Barnard, 1962; *Kerguelenia* Stebbing, 1888.

Remarks. Kergueleniids have lost many of the morphological markers that would indicate relationships to other lysianassoid families, but the group has some morphological similarities to endevourids and lysianassines. Kergueleniids differ most obviously from endevourids in having simple third pereopods. Kergueleniids may be most similar to lysianassines. Both have simple first gnathopods, large first coxae and a well developed posteroventral lobe on coxa 4. Kergueleniids differ from lysianassines in the extremely reduced (in both number and size) setal-teeth on maxilla 1 and in the extremely reduced plates on the maxilliped. Kergueleniids differ from taxa such as *Lepidepecreella* Schellenberg, 1926 and *Izinkala* Griffiths, 1977, which also have very reduced mouthparts, in having coxae 1 to 4 well developed.

Clepidecrella **J.L. Barnard**

Clepidecrella J.L. Barnard, 1962: 24. —J.L. Barnard, 1969: 338. —Barnard & Karaman, 1991: 476. —Lowry & Stoddart, 1994: 144.

Diagnosis. Mandible with vestigial incisor.

Remarks. As noted by Lowry & Stoddart (1994: 144) there is very little difference between *Clepidecrella* and *Kerguelenia*. However the two genera can be consistently distinguished by the presence of a vestigial incisor in *Clepidecrella* and the complete absence of an incisor in *Kerguelenia*. Apart from one species (*C. tropicalis*) *Clepidecrella* species have a short ischium on gnathopod 1 (length less than 2 x breadth) whereas all *Kerguelenia* species have a long or very long ischium (length up to 4.8 x breadth).

Clepidecrella now contains 6 species: *Clepidecrella cabinda* J.L. Barnard, 1962; *C. abeona* **sp. nov.**; *C. cataraqui* **sp. nov.**; *C. colliboi* **sp. nov.**; *C. ira* **sp. nov.**; *C. tropicalis* Lowry & Stoddart, 1994

Key to species of *Clepidecrella*

1. Pereopod 5 basis expanded posteriorly, with posteroventral lobe 2
- Pereopod 5 basis linear, not expanded posteriorly ..... *C. cabinda*
2. Uropod 3 biramous 3

- Uropod 3 uniramous or without rami 4
3. Gnathopod 1 basis expanded midway along anterior margin ..... *C. abeona*
- Gnathopod 1 basis linear or very slightly expanded on anterior margin ..... *C. ira*
4. Uropod 3 without rami ..... *C. tropicalis*
- Uropod 3 uniramous 5
5. Gnathopod 1 propodus subrectangular; pereopod 7 basis with posteroventral lobe not extending much beyond ischium ..... *C. cataraqui*
- Gnathopod 1 propodus tapered distally; pereopod 7 basis with posteroventral lobe extending about halfway along merus ..... *C. colliboi*

***Clepidecrella abeona* sp. nov.**
(Figs 1–3)

Type material. HOLOTYPE, female, 6.0 mm, AM P.68999, east of Cape Naturaliste, Tasmania, Australia, 40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E, 2400–2500 m, mud, clay, 10 December 1986, R.T. Springthorpe, RV *Franklin* stn FR1086-04. PARATYPES: male, 6.0 mm, AM P.69000 and 2 specimens, AM P.69001, type locality.

Type locality. East of Cape Naturaliste, Tasmania, Australia, 40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E, 2400–2500 m depth.

Etymology. Named for the barque *Abeona*, wrecked off King Island, Bass Strait in the late 1800's.

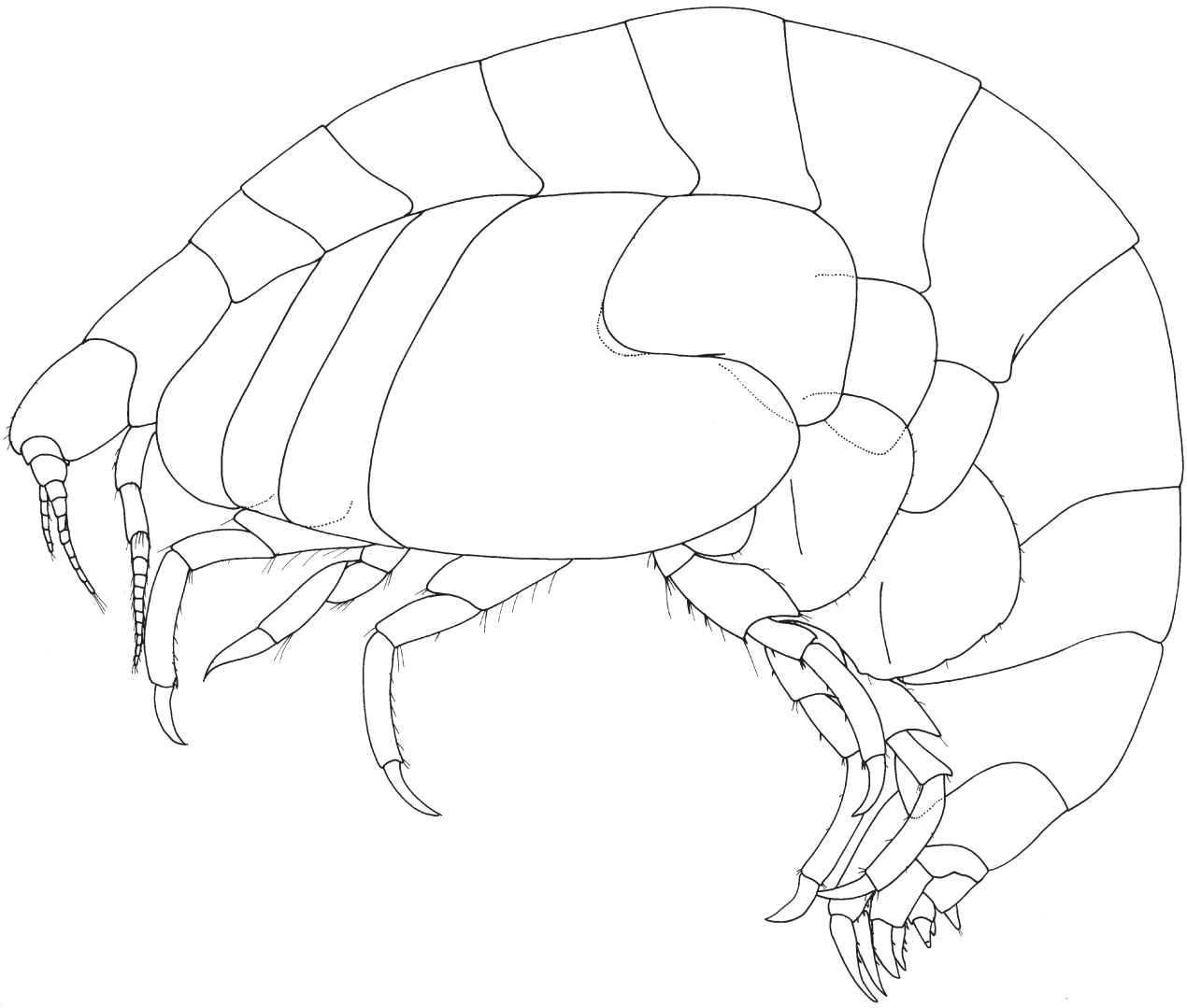

FIGURE 1. *Clepidecrella abeona* **sp. nov.** Holotype female, AM P.68999, east of Cape Naturaliste, Tasmania.

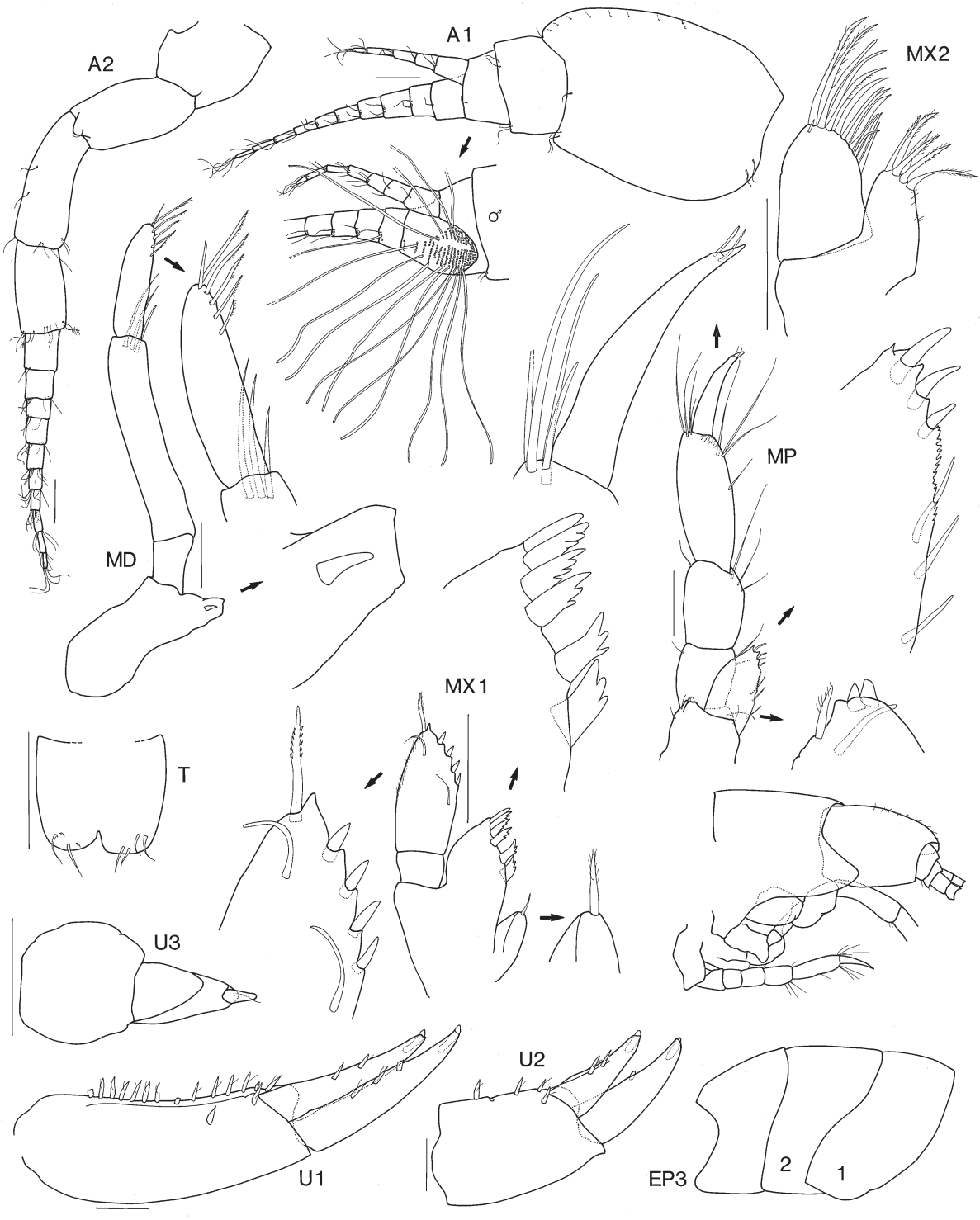

FIGURE 2. *Clepidecrella abeona* **sp. nov.** Holotype female, AM P.68999; paratype male, AM P.69000, east of Cape Naturaliste, Tasmania. Scales represent 0.1 mm.

Diagnostic description. *Antenna 1* peduncular article 1 not or only slightly produced dorsodistally. *Mandible* incisor present; left lacinia mobilis present; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 6 setal-teeth, most setal-teeth cuspidate; palp 2-articulate. *Maxilliped* palp article 2 longer than broad, length 1.5 x breadth. ***Gnathopod 1*** basis expanded midanteriorly; **ischium short**, length 1.65 x

breadth; carpus long, length 3.1 x breadth, longer than (1.7 x) propodus; propodus tapered distally, length 2.3 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis slightly expanded posteriorly**, with posteroventral lobe; merus moderately expanded posteriorly. *Pereopod 7* basis with posteroventral lobe not extending much beyond ischium; merus posteroventral lobe extending less than halfway along carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner narrowly rounded. *Uropod 1* rami with robust setae. ***Uropod 3*** **biramous**; inner ramus about 1.9 x outer ramus; outer ramus 2-articulate. *Telson* shorter than broad, length about 0.9 x breadth.

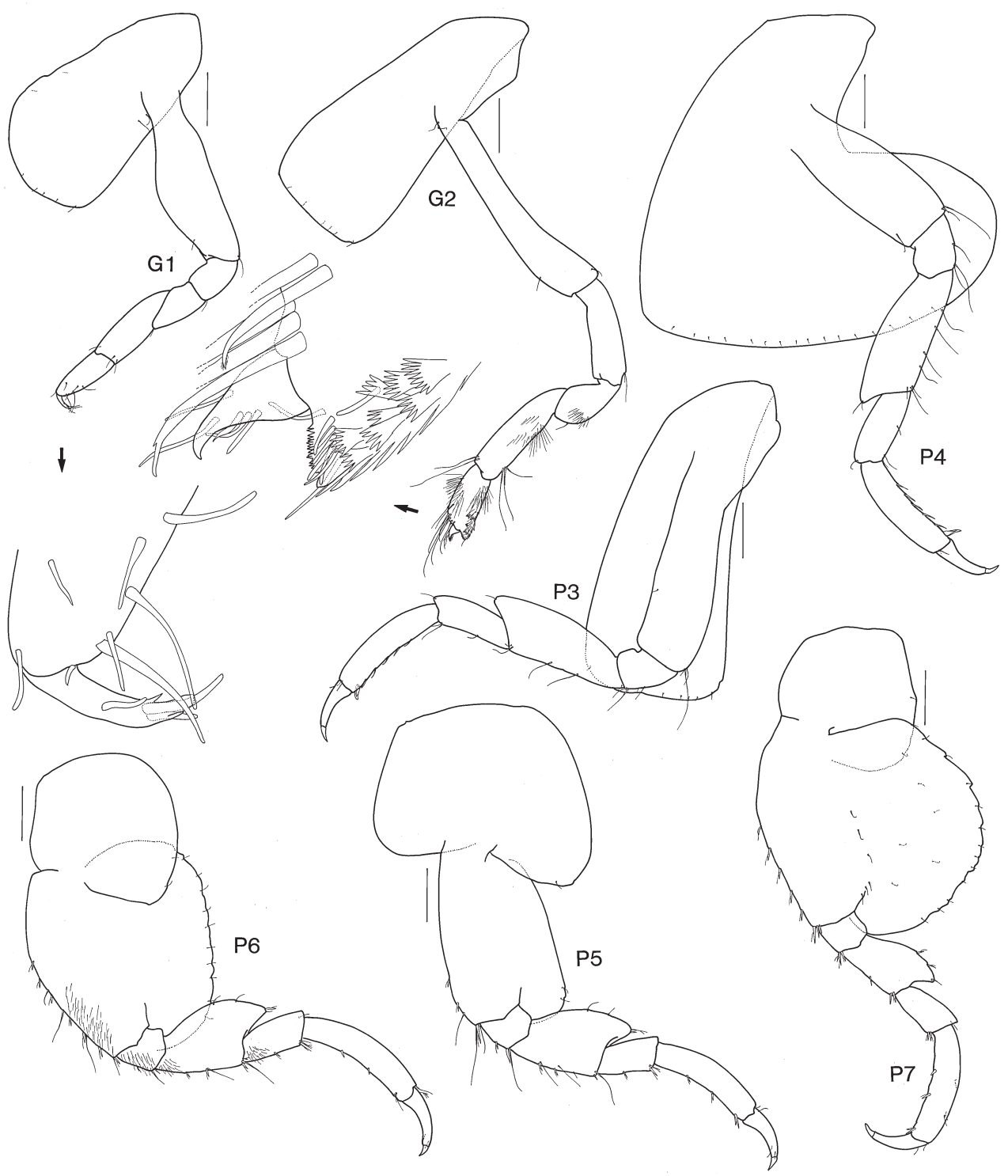

FIGURE 3. *Clepidecrella abeona* **sp. nov.** Holotype female, AM P.68999, east of Cape Naturaliste, Tasmania. Scales represent 0.2 mm.

Male. Antenna 1 with strong 2-field callynophore.

Remarks. *Clepidecrella abeona* is similar to the two previously described species, *C. cabinda* and *C. tropicalis*, in having a lacinia mobilis on the left mandible and 6 setal-teeth on maxilla 1 outer plate. It differs from these two species in not having a molar and having a narrowly rounded posteroventral corner on epimeron 3. It differs from all other *Clepidecrella* species in having a gnathopod 1 basis expanded midanteriorly.

The holotype female has long oostegite buds on gnathopod 2 and pereopods 3 to 5. It is the only species we have seen with a full complement of oostegites.

Distribution. South-eastern Australia, in 2400–2500 m depth.

***Clepidecrella cataraqui* sp. nov.**
(Figs 4–6)

Type material. HOLOTYPE, female, 3.7 mm, AM P.69002, east of Cape Naturaliste, Tasmania, Australia, 40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E, 2400–2500 m, mud, clay, 10 December 1986, R.T. Springthorpe, RV *Franklin* stn FR1086-04.

Type locality. East of Cape Naturaliste, Tasmania, Australia, 40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E, 2400–2500 m depth.

Etymology. Named for the barque *Cataraqui* lost off King Island in 1845.

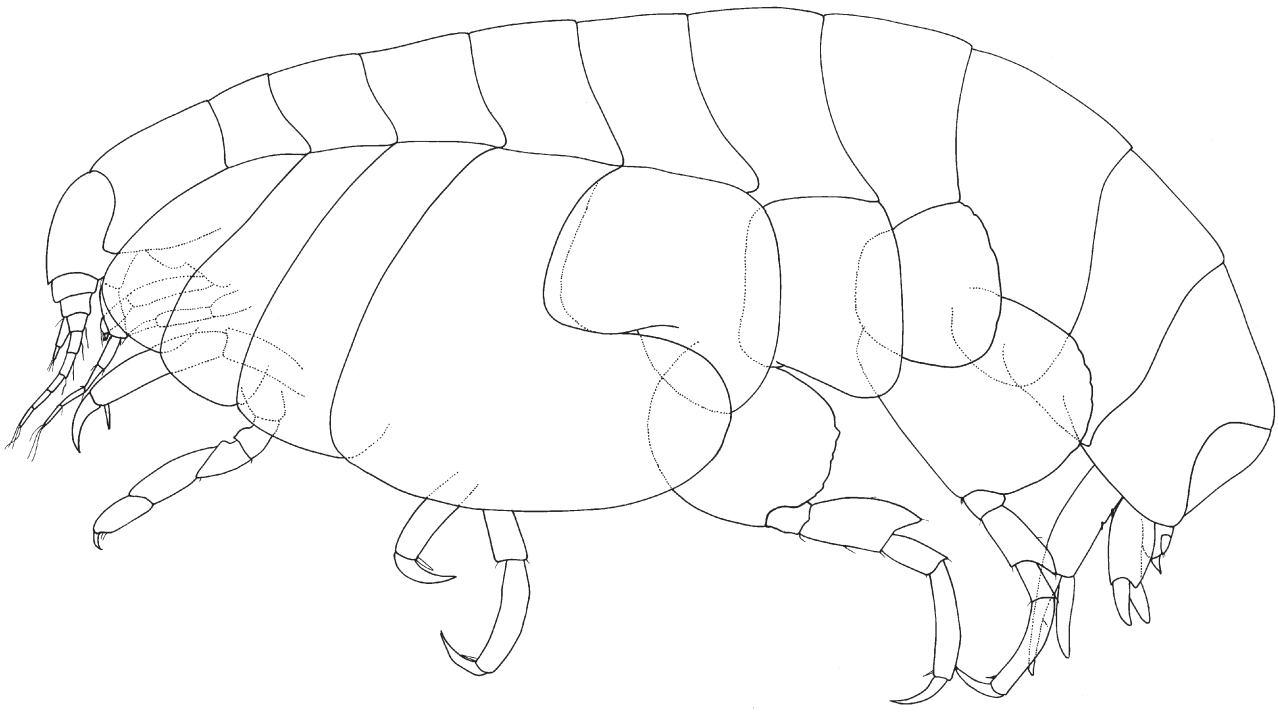

FIGURE 4. *Clepidecrella cataraqui* **sp. nov.** Holotype female, AM P.69002, east of Cape Naturaliste, Tasmania.

Diagnostic description. *Antenna 1* peduncular article 1 not or only slightly produced dorsodistally. *Mandible* incisor present; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 3 setal-teeth, setal-teeth without cusps; palp 2-articulate. *Maxilliped* palp article 2 longer than broad, length 3 x breadth. *Gnathopod 1* basis margins subparallel; ischium short, length 1.7 x breadth; carpus long, length 3.1 x breadth, longer than (1.85 x) propodus; propodus subrectangular, length 2.2 x breadth. *Pereopods 3 and 4* propodus with long distal locking seta. ***Pereopod 5* basis expanded posteroventrally**, with posteroventral lobe; merus moderately expanded posteriorly. *Pereopod 7* basis with posteroventral lobe

not extending much beyond ischium; merus posteroventral lobe extending less than halfway along carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner narrowly rounded. *Uropod 1* rami without robust setae. ***Uropod 3*** **uniramous; outer ramus 2-articulate**. *Telson* shorter than broad, length about 0.9 x breadth.

Remarks. *Clepidecrella cataraqui*, *C. colliboi* and *C. ira* share the characters of left lacinia mobilis absent and maxilla 1 outer plate with only 3 setal-teeth. *Clepidecrella cataraqui* can be distinguished from *C. colliboi* and *C. ira* by the long distal locking seta on pereopods 3 and 4, the short posteroventral lobe on the basis of pereopod 7, the 2-articulate outer ramus on uropod 3 and the shorter than broad telson.

The holotype female has a non-setose oostegite on pereopod 5 only.

Distribution. South-eastern Australia, in 2400–2500 m depth.

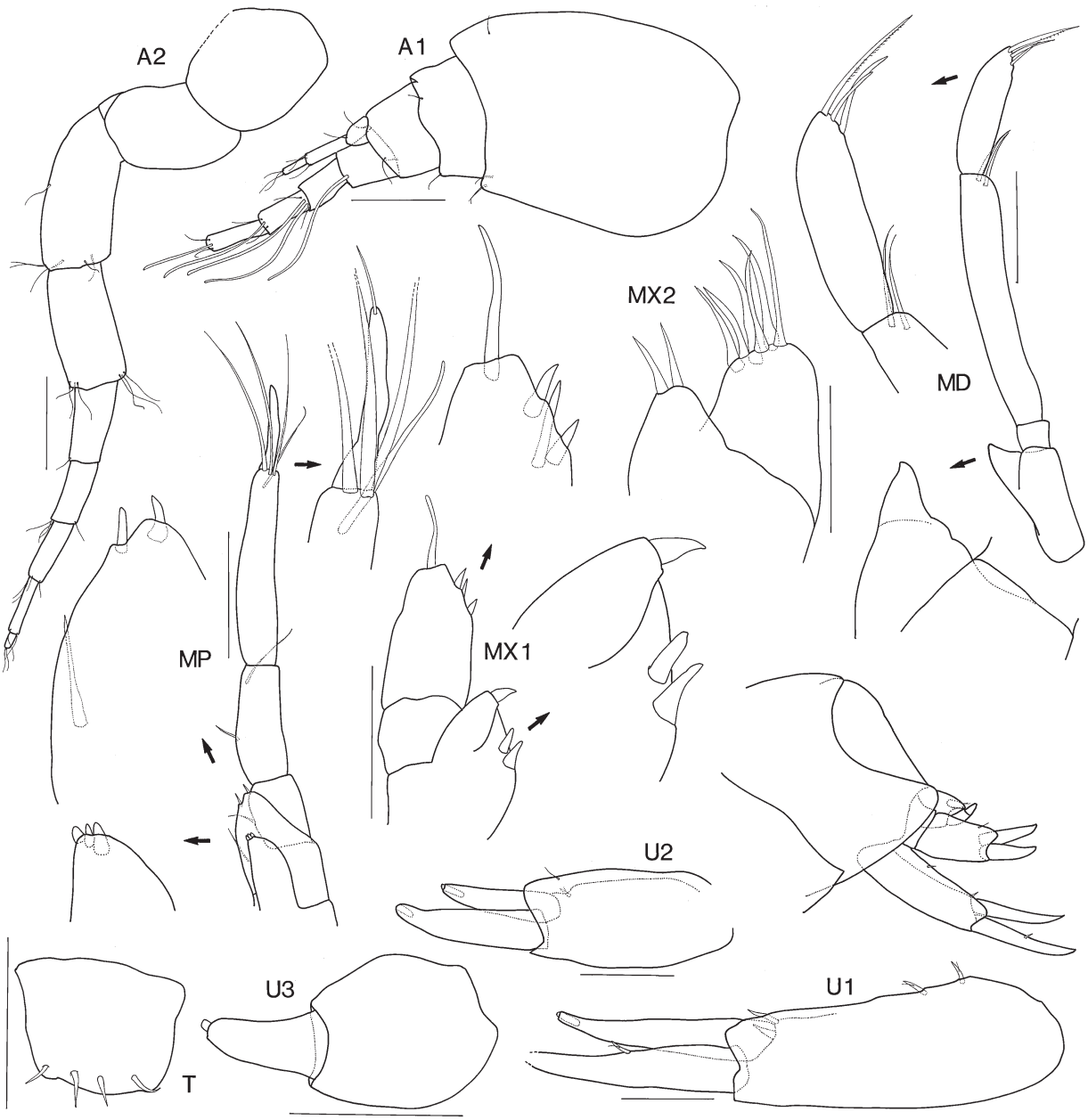

FIGURE 5. *Clepidecrella cataraqui* **sp. nov.** Holotype female, AM P.69002, east of Cape Naturaliste, Tasmania. Scales for MX1, MX2, U3, T represent 0.05 mm; remainder represent 0.1 mm.

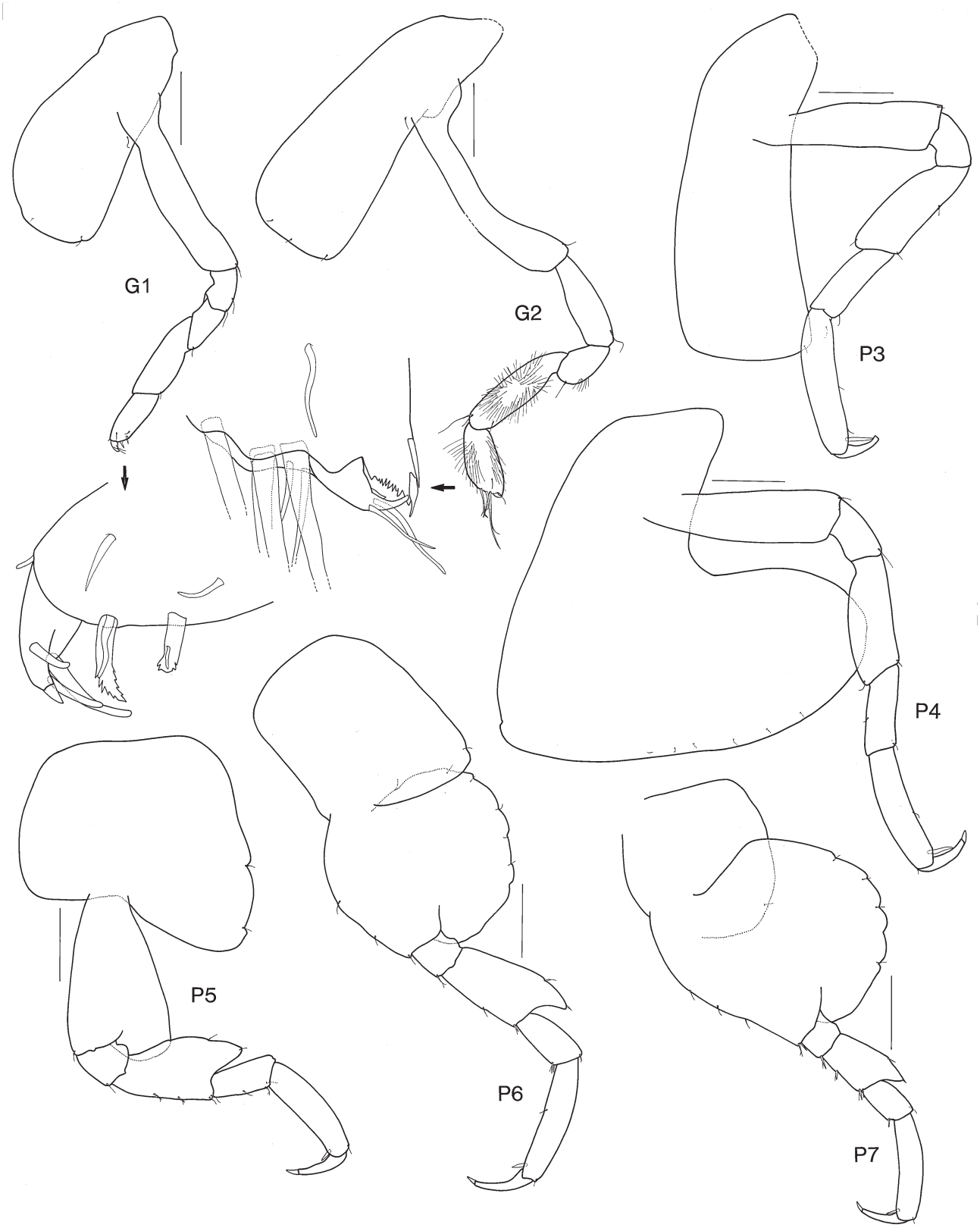

FIGURE 6. *Clepidecrella cataraqui* **sp. nov.** Holotype female, AM P.69002, east of Cape Naturaliste, Tasmania. Scales represent 0.2 mm.

***Clepidecrella colliboi* sp. nov.**
(Figs 7–9)

Type material. HOLOTYPE, female, 3.0 mm, ovigerous (2 eggs), MV J59386, off Freycinet Peninsula, Tasmania, Australia, 41°58.60'S 148°38.80'E, 500 m, coarse shell, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.*, RV *Franklin*, stn SLOPE 47. PARATYPES: 1 specimen, MV J61496, same data as holotype; 2 specimens, AM P.81163 and 2 specimens, MV J61497, south of Point Hicks, Victoria, Australia, 38°21.90'S 149°20.00'E, 1000 m, WHOI epibenthic sled, 23 July 1986, G.C.B. Poore *et al.*, RV *Franklin*, stn SLOPE 32; 3 males, MV J61498, south of Point Hicks, Victoria, Australia, 38°19.60'S 149°24.30'E, 930 m, rock, rubble, clay, sand, biogenic sediment, WHOI epibenthic sled, 23 July 1986, M.F. Gomon *et al.*, RV *Franklin*, stn SLOPE 33.

Type locality. Off Freycinet Peninsula, Tasmania, Australia, 41°58.60'S 148°38.80'E, 500 m depth.

Etymology. Named for the steamship *Colliboi* beached on Woolnorth Point, Tasmania in 1932.

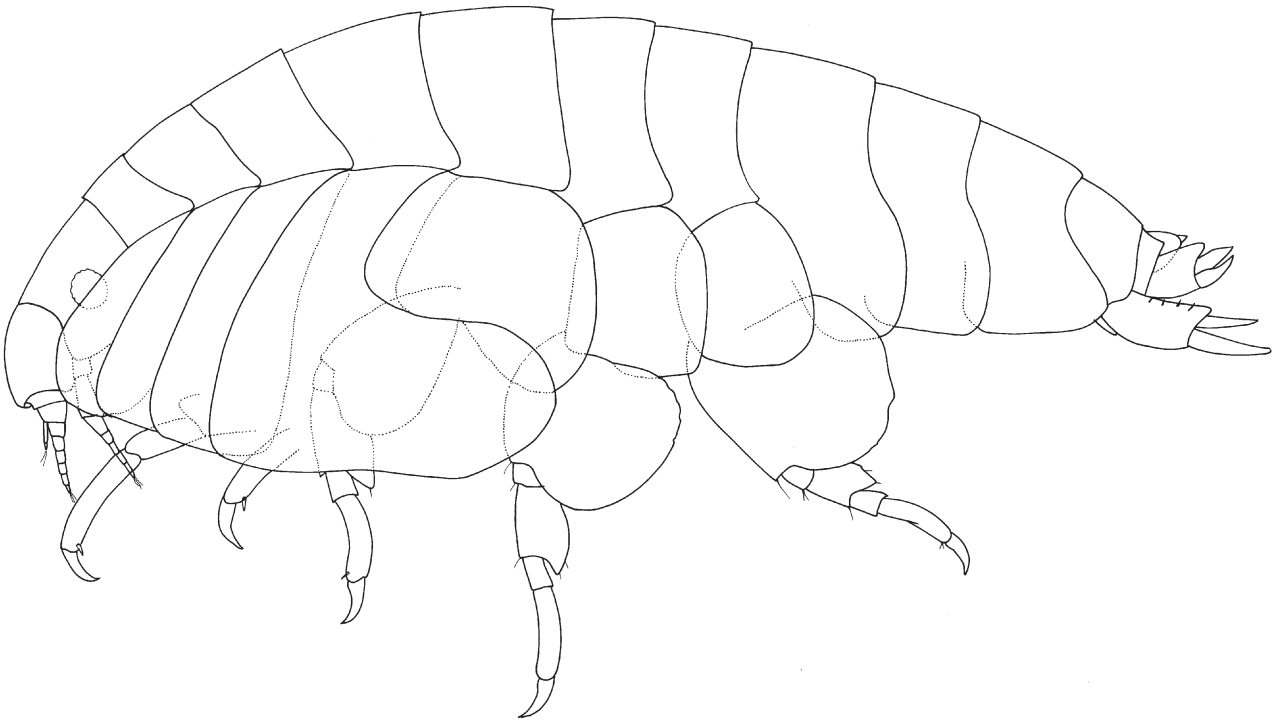

FIGURE 7. *Clepidecrella colliboi* **sp. nov.** Holotype female, MV J59386, off Freycinet Peninsula, Tasmania.

Diagnostic description. ***Antenna 1* peduncular article 1 not or only slightly produced dorsodistally**. *Mandible* incisor present; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 3 setal-teeth, most setal-teeth without cusps; palp 2-articulate. *Maxilliped* palp article 2 longer than broad, length 1.9 x breadth. *Gnathopod 1* basis margins subparallel; ischium short, length 1.6 x breadth; carpus long, length 3 x breadth, longer than (1.5 x) propodus; propodus tapered distally, length 2.4 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5* basis expanded posteroventrally**, with posteroventral lobe; merus moderately expanded posteriorly. *Pereopod 7* basis with posteroventral lobe extending about halfway along merus; merus posteroventral lobe extending less than halfway along carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner narrowly rounded. *Uropod 1* rami without robust setae. ***Uropod 3* uniramous; outer ramus 1-articulate**. *Telson* longer than broad, length about 1.3 x breadth.

Male. Antenna 1 with strong 2-field callynophore.

Remarks. *Clepidecrella cataraqui*, *C. colliboi* and *C. ira* share the characters of left lacinia mobilis absent and maxilla 1 outer plate with only 3 setal-teeth. *Clepidecrella colliboi* can be distinguished from *C. ira* by the lack of robust setae on the rami of uropod 1 and the uniramous uropod 3. It can be distinguished

from *C. cataraqui* by the presence of cusps on one tooth of maxilla 1 outer plate setal-teeth, the slightly tapered propodus of gnathopod 1, the presence of a posteroventral lobe on the basis of pereopod 7 and the longer than broad telson.

The ovigerous holotype female has an oostegite on pereopod 5 only.

Distribution. South-eastern Australia, in 500–1000 m depth.

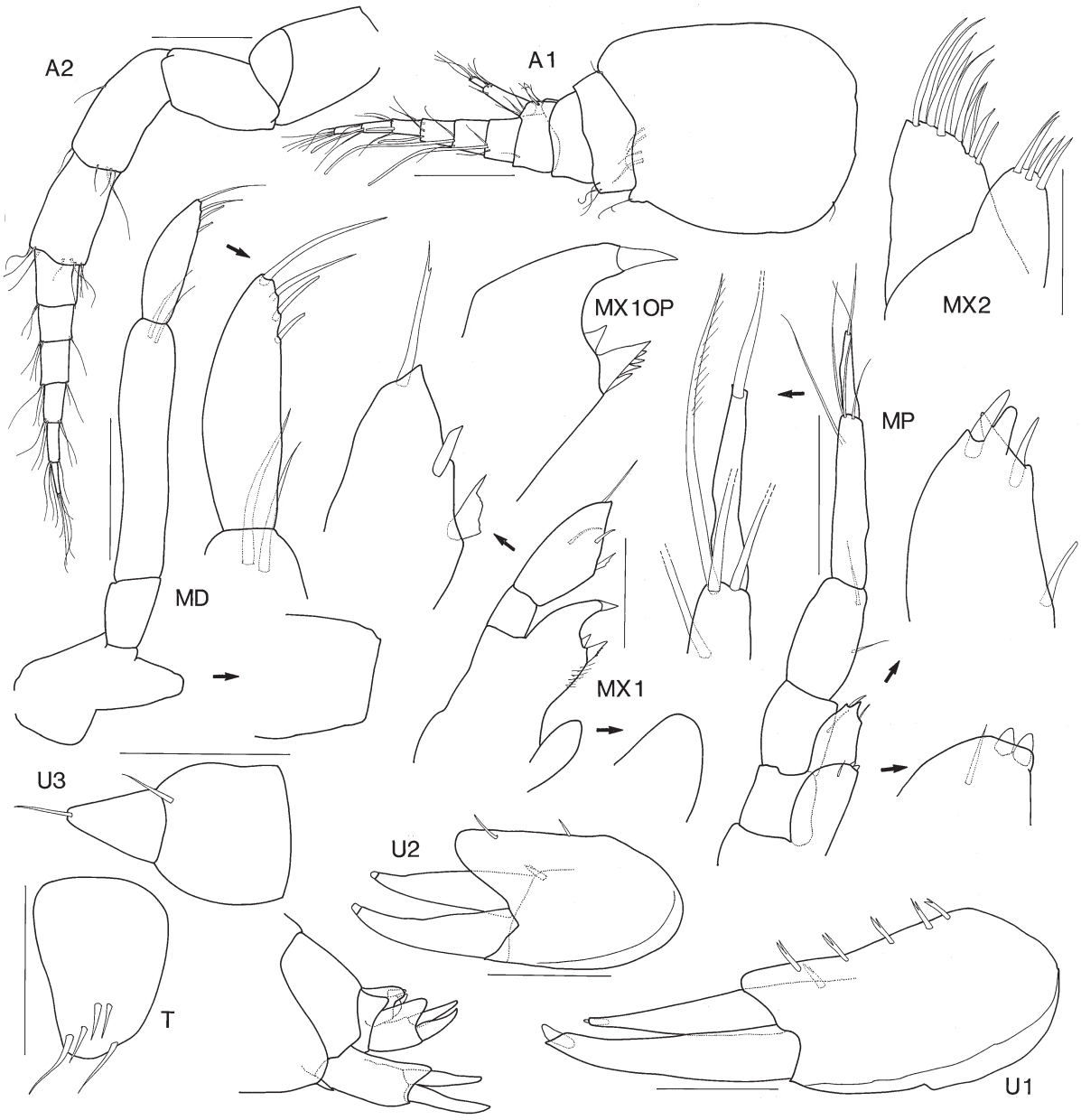

FIGURE 8. *Clepidecrella colliboi* **sp. nov.** Holotype female, MV J59386, off Freycinet Peninsula, Tasmania. Scales for MX1, MX2, U3, T represent 0.05 mm; remainder represent 0.1 mm.

***Clepidecrella ira* sp. nov.**
(Figs 10–12)

Type material. HOLOTYPE, female, 3.2 mm, MV J61499, south of Point Hicks, Victoria, Australia, 38°16.40'S 149°27.60'E, 800 m, coarse shell, biogenic sediments, WHOI epibenthic sled, 23 July 1986, M.F.

Gomon *et al.*, RV *Franklin*, stn SLOPE 34. PARATYPES: 10 specimens, AM P.82599 and 10 specimens, MV J61500, same data as holotype; 1 specimen, MV J61501, south of Point Hicks, Victoria, Australia, 38°21.90'S 149°20.00'E, 1000 m, WHOI epibenthic sled, 23 July 1986, G.C.B. Poore *et al.*, RV *Franklin*, stn SLOPE 32; 3 specimens, MV J61502, off Freycinet Peninsula, Tasmania, Australia, 41°58.60'S 148°38.80'E, 500 m, coarse shell, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.*, RV *Franklin*, stn SLOPE 47.

Type locality. South of Point Hicks, Victoria, Australia, 38°16.40'S 149°27.60'E, 800 m depth.

FIGURE 9. *Clepidecrella colliboi* **sp. nov.** Holotype female, MV J59386, off Freycinet Peninsula, Tasmania. Scales represent 0.1 mm.

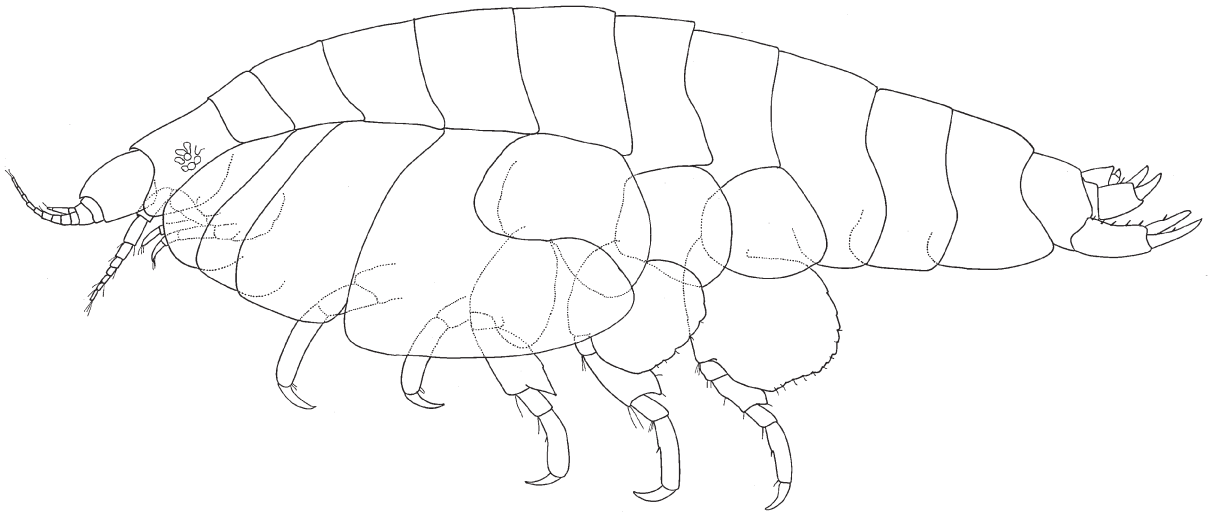

FIGURE 10. *Clepidecrella ira* **sp. nov.** Holotype female, MV J61499, south of Point Hicks, Victoria.

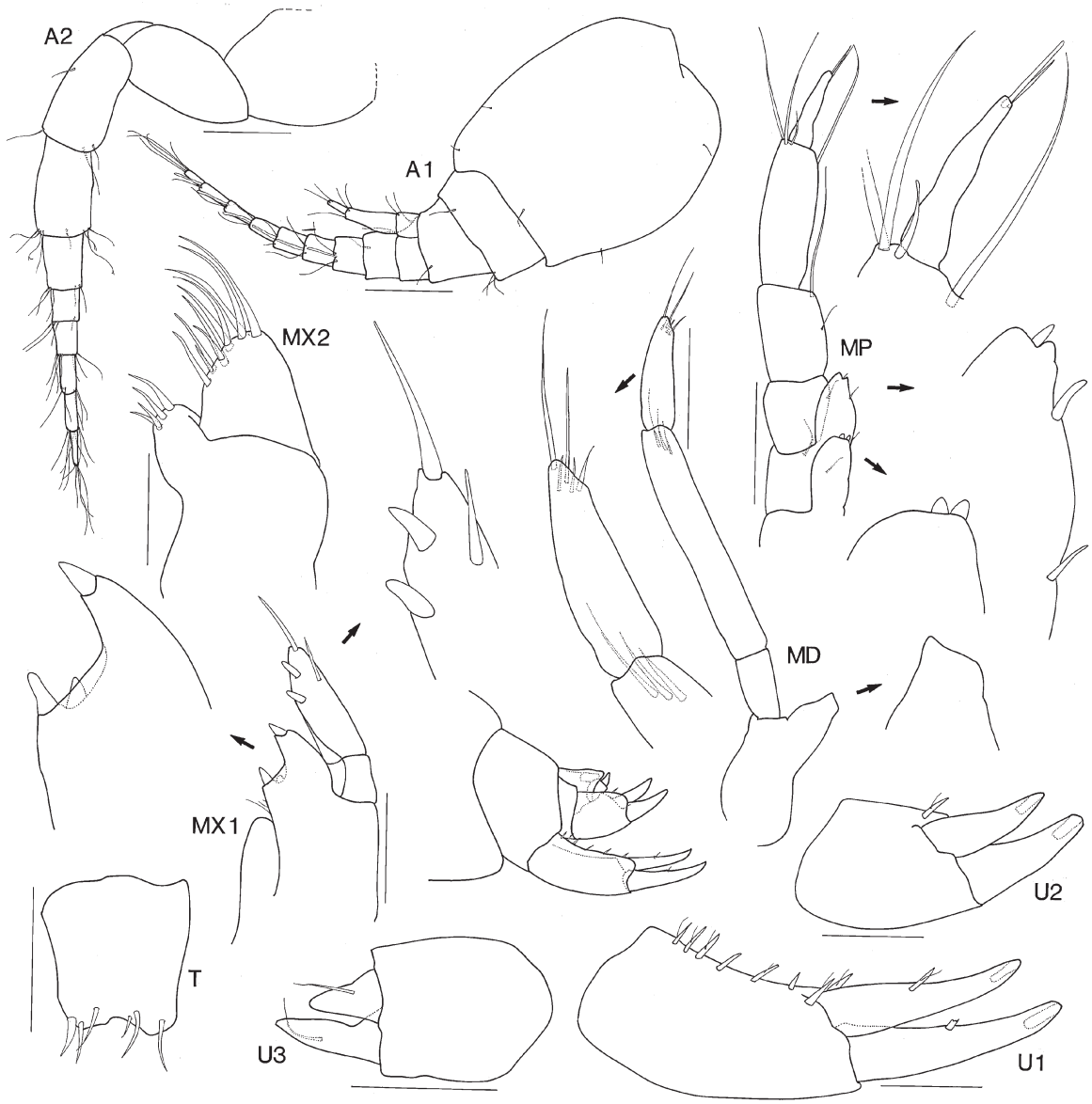

FIGURE 11. *Clepidecrella ira* **sp. nov.** Holotype female, MV J61499, south of Point Hicks, Victoria. Scales for MX1, MX2, U3, T represent 0.05 mm; remainder represent 0.1 mm.

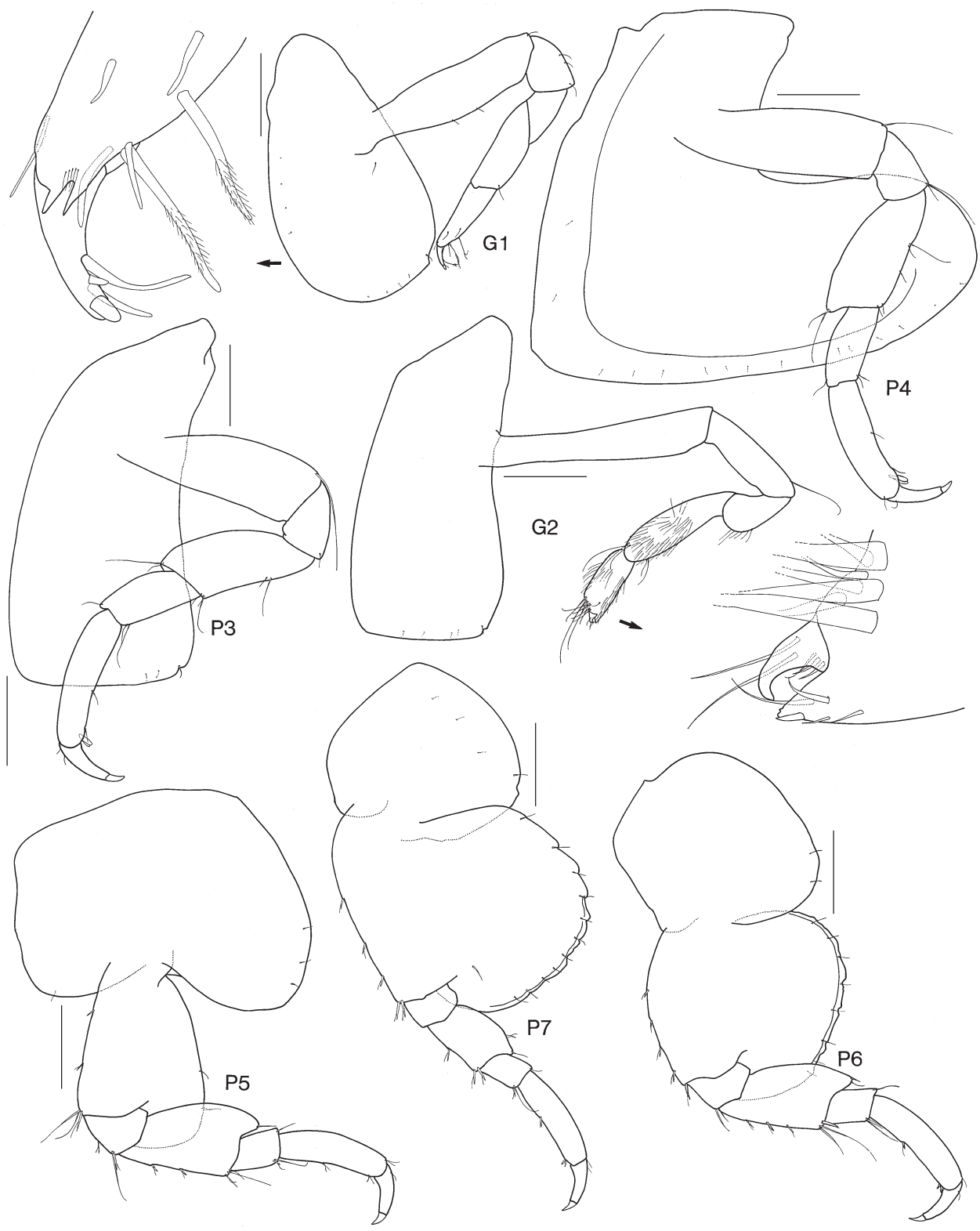

FIGURE 12. *Clepidecrella ira* **sp. nov.** Holotype female, MV J61499, south of Point Hicks, Victoria. Scales represent 0.2 mm.

Etymology. Named for the wooden schooner *Ira* which went ashore in gale conditions on Ninth Island, Bass Strait in 1868.

Diagnostic description. *Antenna 1* peduncular article 1 not or only slightly produced dorsodistally.

Mandible incisor present; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 3 setal-teeth, setal-teeth without cusps; palp 2-articulate. *Maxilliped* palp article 2 longer than broad, length 1.5 x breadth. ***Gnathopod 1*** basis margins subparallel; **ischium short**, length 1.5 x breadth; carpus long, length 3 x breadth, longer than (1.4 x) propodus; propodus tapered distally, length 2.7 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis expanded posteroventrally**, with posteroventral lobe; merus moderately expanded posteriorly. *Pereopod 7* basis with posteroventral lobe extending about halfway along merus; merus posteroventral lobe extending less than halfway along carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner narrowly rounded. *Uropod 1* rami with robust setae. ***Uropod 3*** **biramous**; inner ramus about 0.7 x outer ramus; outer ramus 1-articulate. *Telson* longer than broad, length about 1.1 x breadth.

Remarks. *Clepidecrella cataraqui*, *C. colliboi* and *C. ira* share the characters of left lacinia mobilis absent and maxilla 1 outer plate with only 3 setal-teeth. *Clepidecrella ira* can be distinguished from *C. cataraqui* and *C. colliboi* as discussed under those species.

The non-ovigerous holotype female has a non-setose oostegite on pereopod 5 only.

Distribution. South-eastern Australia, in 500–1000 m depth.

Kerguelenia Stebbing, 1888

Kerguelenia Stebbing, 1888: 1219. —Sars, 1891: 119. —Della Valle, 1893: 786. —Stebbing, 1906: 11. —Stephensen, 1929: 51. —J.L. Barnard, 1969: 346. —Ledoyer, 1986: 770. —Diviacco & Ruffo, 1989: 488. —Barnard & Karaman, 1991: 493. —Lowry & Stoddart, 1994: 163.

Diagnosis. Mandible without incisor.

Remarks. We see no reason to maintain the subspecies status of *K. borealis japonica* and *K. borealis ochotica* established by Gurjanova (1962) and here raise them to full species.

Kerguelenia now contains 20 species: *Kerguelenia adeliensis* Bellan-Santini, 1972; *K. antarctica* K.H. Barnard, 1930; *K. antiborealis* Bellan-Santini & Ledoyer, 1987; *K. borealis* Sars, 1891; *K. compacta* Stebbing, 1888; *K. eoa* Gurjanova, 1962; *K. euroka* **sp. nov.**; *K. glacialis* Schellenberg, 1926; *K. japonica* Gurjanova, 1962; *K. kanowna* **sp. nov.**; *K. kawatiri* **sp. nov.**; *K. koutoumo* Lowry & Stoddart, 1994; *K. leura* **sp. nov.**; *K. lifou* Lowry & Stoddart, 1994; *K. macropoda* Ledoyer, 1986; *K. matilda* **sp. nov.**; *K. microphthalma* Ledoyer, 1986; *K. ochotica* Gurjanova, 1962; *K. palpalis* K.H. Barnard, 1932; *K. reducta* Ledoyer, 1977.

Key to species of *Kerguelenia*

1. Pereopod 5 basis linear 2
- Pereopod 5 basis slightly expanded posteriorly 7
- Pereopod 5 basis moderately expanded posteroventrally (pear-shaped) 10
2. Antenna 1 peduncular article 1 not produced dorsodistally 3
- Antenna 1 peduncular article 1 produced dorsodistally into a large rounded lobe 6
3. Gnathopod 1 ischium long (length about 3 x breadth) 4
- Gnathopod 1 ischium very long (length about 4 x breadth) 5
4. Uropod 3 rami absent ..... *K. euroka*
- Uropod 3 uniramous ..... *K. compacta*
5. Pereopod 7 basis extending about halfway along merus; uropod 3 ramus 2-articulate ..... *K. kawatiri*
- Pereopod 7 basis extending beyond merus; uropod 3 ramus 1-articulate ..... *K. macropoda*
6. Uropod 3 biramous ..... *K. adeliensis*
- Uropod 3 uniramous ..... *K. antarctica*
7. Gnathopod 1 ischium long (length about 3 x breadth) 8
- Gnathopod 1 ischium very long (length about 4 x breadth) 9
8. Gnathopod 1 basis expanded midanteriorly; uropod 3 uniramous ..... *K. eoa*
- Gnathopod 1 basis not expanded midanteriorly, margins parallel; uropod 3 biramous ..... *K. koutoumo*

9. Gnathopod 1 carpus subequal to propodus; uropod 3 uniramous ..... *K. lifou*
- Gnathopod 1 carpus longer than propodus; uropod 3 biramous ..... *K. microphthalma*
10. Maxilliped palp article 2 about as broad as long ..... *K. palpalis*
- Maxilliped palp article 2 longer than broad 11
11. Gnathopod 1 basis expanded midanteriorly 12
- Gnathopod 1 basis not expanded midanteriorly, margins parallel 13
12. Pereopod 5 merus strongly expanded posteriorly; uropod 3 uniramous ..... *K. glacialis*
- Pereopod 5 merus slightly expanded posteriorly; uropod 3 without rami ..... *K. reducta*
13. Gnathopod 1 carpus slightly longer than propodus ..... *K. japonica*
- Gnathopod 1 carpus subequal to propodus 14
14. Antenna 1 peduncular article 1 not or only slightly produced dorsodistally 15
- Antenna 1 peduncular article 1 moderately produced dorsodistally, rounded 17
- Antenna 1 peduncular article 1 strongly produced dorsodistally, subacute ..... *K. matilda*
15. Pereopod 7 basis posteroventral lobe extending about halfway along merus 16
- Pereopod 7 basis posteroventral lobe not extending beyond ischium ..... *K. kanowna*
16. Gnathopod 1 carpus very long (length about 5 x breadth); uropod 1 rami without robust setae ..... *K. antiborealis*
- Gnathopod 1 carpus long (length about 3.5 x breadth); uropod 1 rami with robust setae ..... *K. leura*
17. Gnathopod 1 carpus very long (length about 5 x breadth); uropod 3 outer ramus 1-articulate ..... *K. borealis*
- Gnathopod 1 carpus long (length about 3 x breadth); uropod 3 outer ramus 2-articulate ..... *K. ochotica*

***Kerguelenia euroka* sp. nov.**
(Figs 13–15)

Type material. HOLOTYPE, female, ovigerous (2 eggs), 3.8 mm, AM P.69003, east of Long Reef Point, New South Wales, Australia, 33°46'S 151°43'E, 176 m, dredged, 5 December 1977, FRV *Kapala*, stn K-77-23-01. PARATYPES: 1 female, 3.4 mm, AM P.69004, type locality; 1 female, 2.5 mm, AM P.69005, east of Merimbula, New South Wales, Australia, 36°52.5'S 150°18.1'E, 149–152 m, trawl, 4 September 1994, P.B. Berents, FRV *Southern Surveyor*, stn 05/94/145; 1 female, 2.4 mm, MV J61503, 66 km south of Rodondo Island, central Bass Strait, Australia, 39°48.6'S 146°18.8'E, 82 m, sand, silt and mud, epibenthic sled, 13 November 1981, R. Wilson, RV *Tangaroa*, stn BSS 158S; 1 female, 2.8 mm, MV J61504, 6 km west of Currie, King Island, western Bass Strait, Australia, 39°54.7'S 143°43.4'E, 49 m, coarse sand, 21 November 1981, R. Wilson, RV *Tangaroa*, stn BSS 196.

FIGURE 13. *Kerguelenia euroka* **sp. nov.** Paratype female, AM P.69004, east of Long Reef Point, New South Wales.

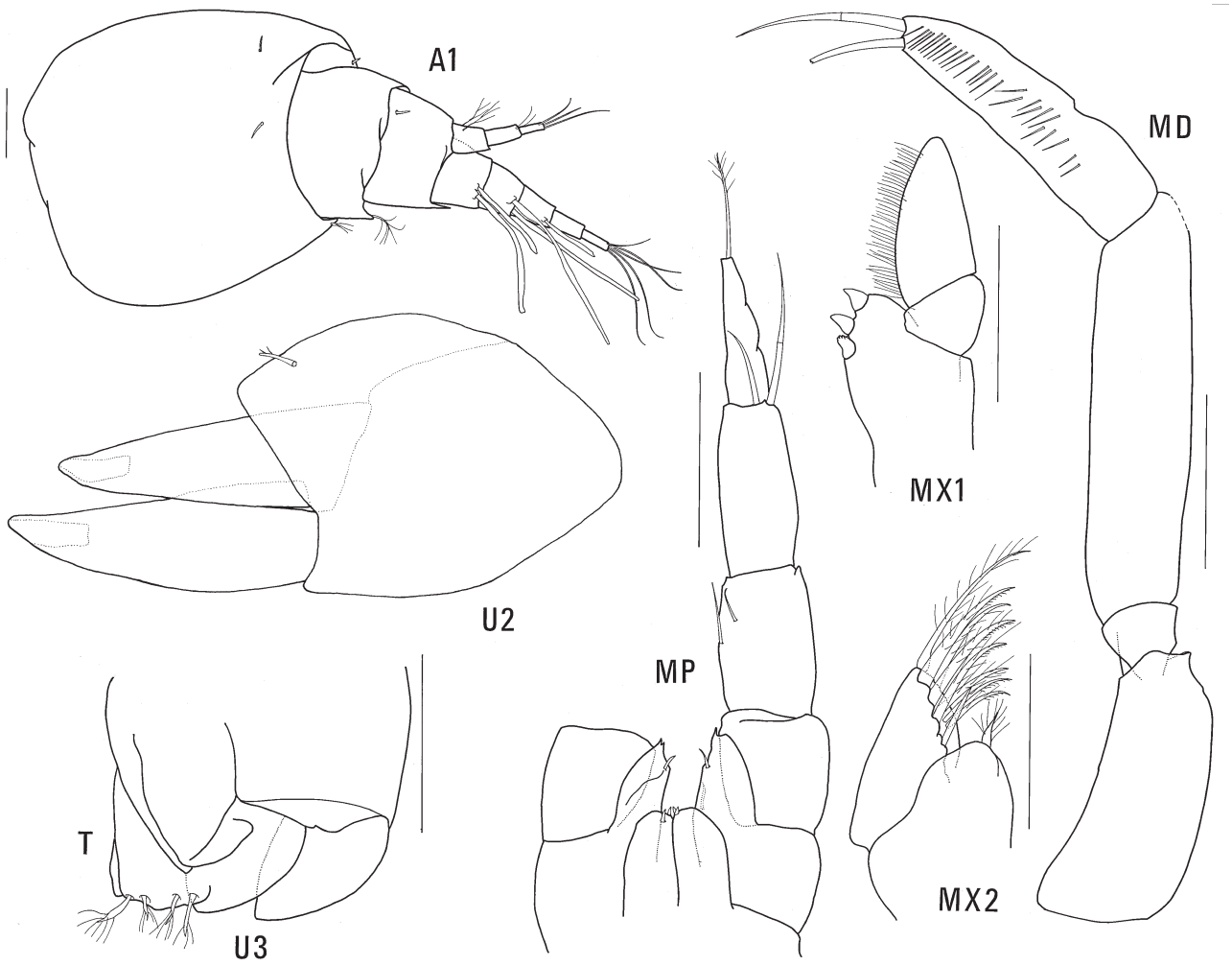

FIGURE 14. *Kerguelenia euroka* **sp. nov.** Holotype female, AM P.69003, east of Long Reef Point, New South Wales. Scales represent 0.5 mm.

Type locality. East of Long Reef Point, New South Wales, Australia, 33°46'S 151°43'E, 176 m depth.

Etymology. Named for the paddle steamer *Euroka* wrecked off Long Reef in 1913.

Diagnostic description. *Antenna 1* peduncular article 1 not or only slightly produced dorsodistally. *Mandible* incisor absent; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 3 setal-teeth, most setal-teeth without cusps; palp 2-articulate. *Maxilliped* palp article 2 longer than broad, length 1.5 x breadth. *Gnathopod 1* basis margins subparallel; ischium long, length 3.7 x breadth; carpus long, length 2.4 x breadth, subequal to (1 x) propodus; propodus tapered distally, length 3.4 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis linear**, without posteroventral lobe; merus strongly expanded posteriorly. *Pereopod 7* basis with posteroventral lobe extending beyond merus; merus posteroventral lobe extending beyond carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner narrowly rounded. *Uropod 1* rami without robust setae. ***Uropod 3*** **rami absent**. *Telson* shorter than broad.

Remarks. *Kerguelenia euroka* belongs to a group of species (*K. adeliensis, K. antarctica, K. compacta, K. kawatiri* and *K. macropoda*) in which the basis of pereopod 5 is linear. It is most similar to *K. macropoda* from Madagascar but can be distinguished from that species by the greater size of pereopod 5 merus and the more distal production of the posteroventral lobe of pereopod 7 merus.

The holotype female, although ovigerous, has no oostegites.

Distribution. South-eastern Australia, in 49–176 m depth.

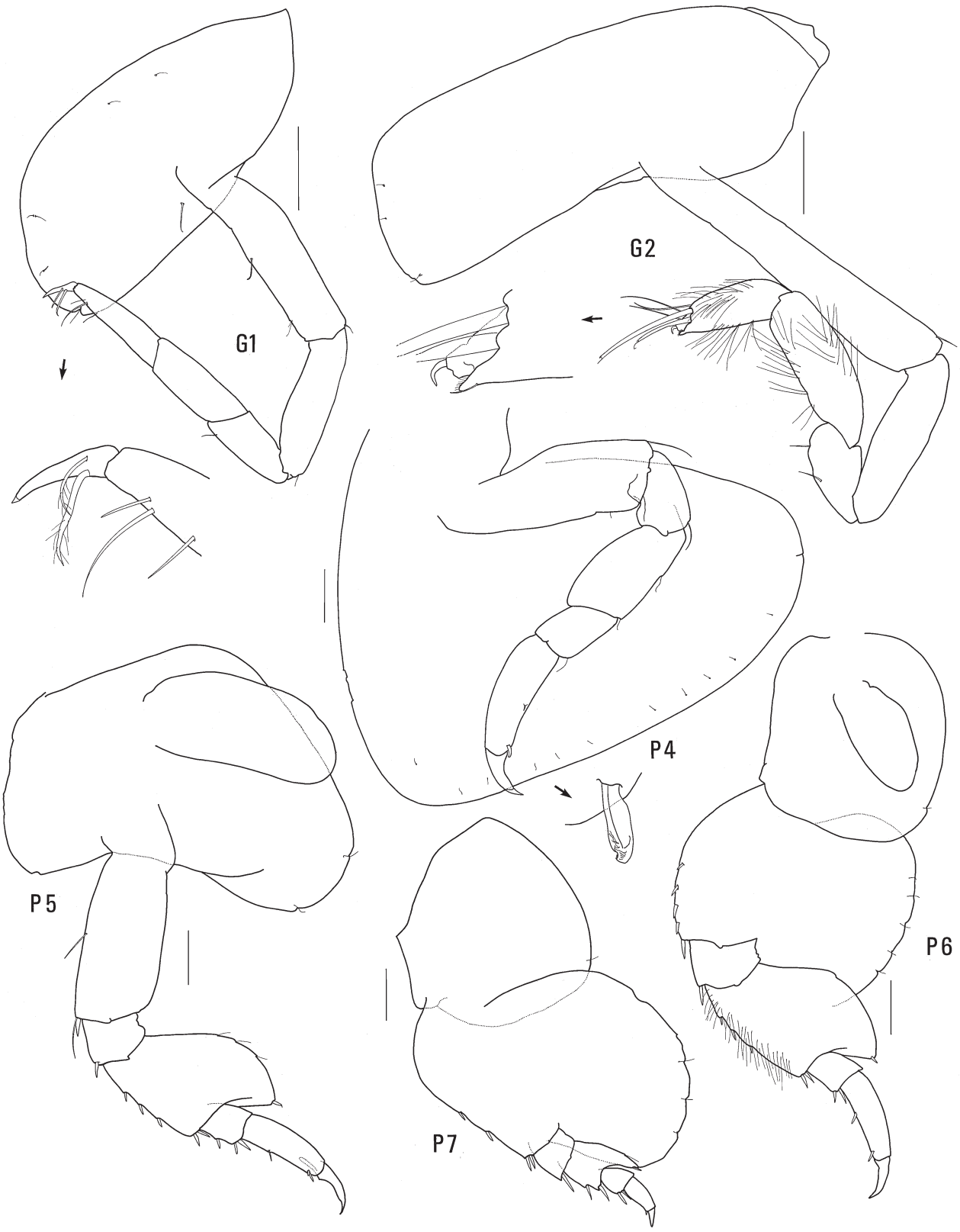

FIGURE 15. *Kerguelenia euroka* **sp. nov.** Holotype female, AM P.69003, east of Long Reef Point, New South Wales. Scales represent 0.1 mm.

***Kerguelenia kanowna* sp. nov.**
(Figs 16–18)

Type material. HOLOTYPE, female, 4.2 mm, MV J61505, south of Point Hicks, Victoria, Australia, 38°19.60'S 149°24.30'E, 930 m, rock, rubble, clay, sand, biogenic sediment, WHOI epibenthic sled, 23 July 1986, M.F. Gomon *et al.*, RV *Franklin*, stn SLOPE 33. PARATYPES: 1 female and 2 males, MV J61506, south of Point Hicks, Victoria, Australia, 38°21.90'S 149°20.00'E, 1000 m, WHOI epibenthic sled, 23 July 1986, G.C.B. Poore *et al.*, RV *Franklin*, stn SLOPE 32; 1 female, AM P.69011, east of Broken Bay, New South Wales, Australia, 33°30'S 152°09'E to 33°33'S 152°11'E, 922–1015 m, beam trawl, 12 February 1986, R.T. Springthorpe, FRV *Kapala*, stn K86-01-08.

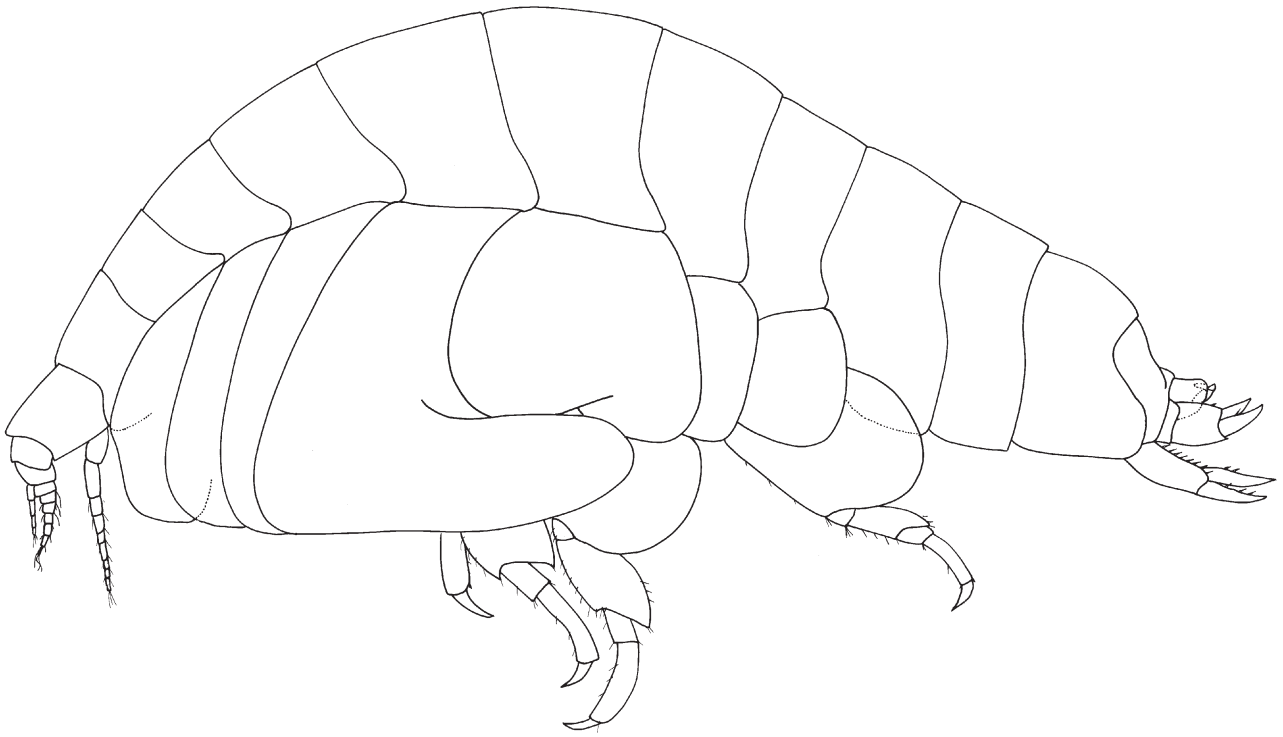

FIGURE 16. *Kerguelenia kanowna* **sp. nov.** Holotype female, MV J61505, south of Point Hicks, Victoria.

Type locality. South of Point Hicks, Victoria, Australia, 38°19.60'S 149°24.30'E, 930 m depth.

Etymology. Named for the interstate passenger liner TSS *Kanowna*, which sank off Wilsons Promontory in 1929 with no loss of life.

Diagnostic description. *Antenna 1* peduncular article 1 not or only slightly produced dorsodistally. *Mandible* incisor absent; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 5 setal-teeth, most setal-teeth cuspidate; palp 2-articulate. ***Maxilliped*** **palp article 2 longer than broad**, length 2 x breadth. ***Gnathopod 1*** basis margins subparallel; **ischium very long**, length 4.3 x breadth; carpus very long, length 4.8 x breadth, subequal to (1.1 x) propodus; propodus tapered distally, length 5.3 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis expanded posteroventrally**, with posteroventral lobe; merus moderately expanded posteriorly. ***Pereopod 7*** **basis with posteroventral lobe not extending much beyond ischium**; merus posteroventral lobe extending more than halfway along, but not beyond, carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner broadly rounded. *Uropod 1* rami with robust setae. *Uropod 3* biramous; inner ramus about 0.5 x outer ramus; outer ramus 2-articulate. *Telson* about as long as broad, length about 1 x breadth.

Remarks. *Kerguelenia kanowna* belongs to a group of species (*K. antiborealis, K. borealis, K. leura, K. ochotica* and *K. matilda*) in which the basis of pereopod 5 is expanded posteroventrally and gnathopod 1 carpus is subequal to the propodus. It is most similar to *K. antiborealis* from Marion Island in the Southern

Ocean. It can be distinguished from that species by the greater size of pereopod 5 merus and of pereopod 7 basis in *K. antiborealis*.

The non-ovigerous holotype female has a setose oostegite on pereopod 5 only.

Distribution. South-eastern Australia, in 922–1015 m depth.

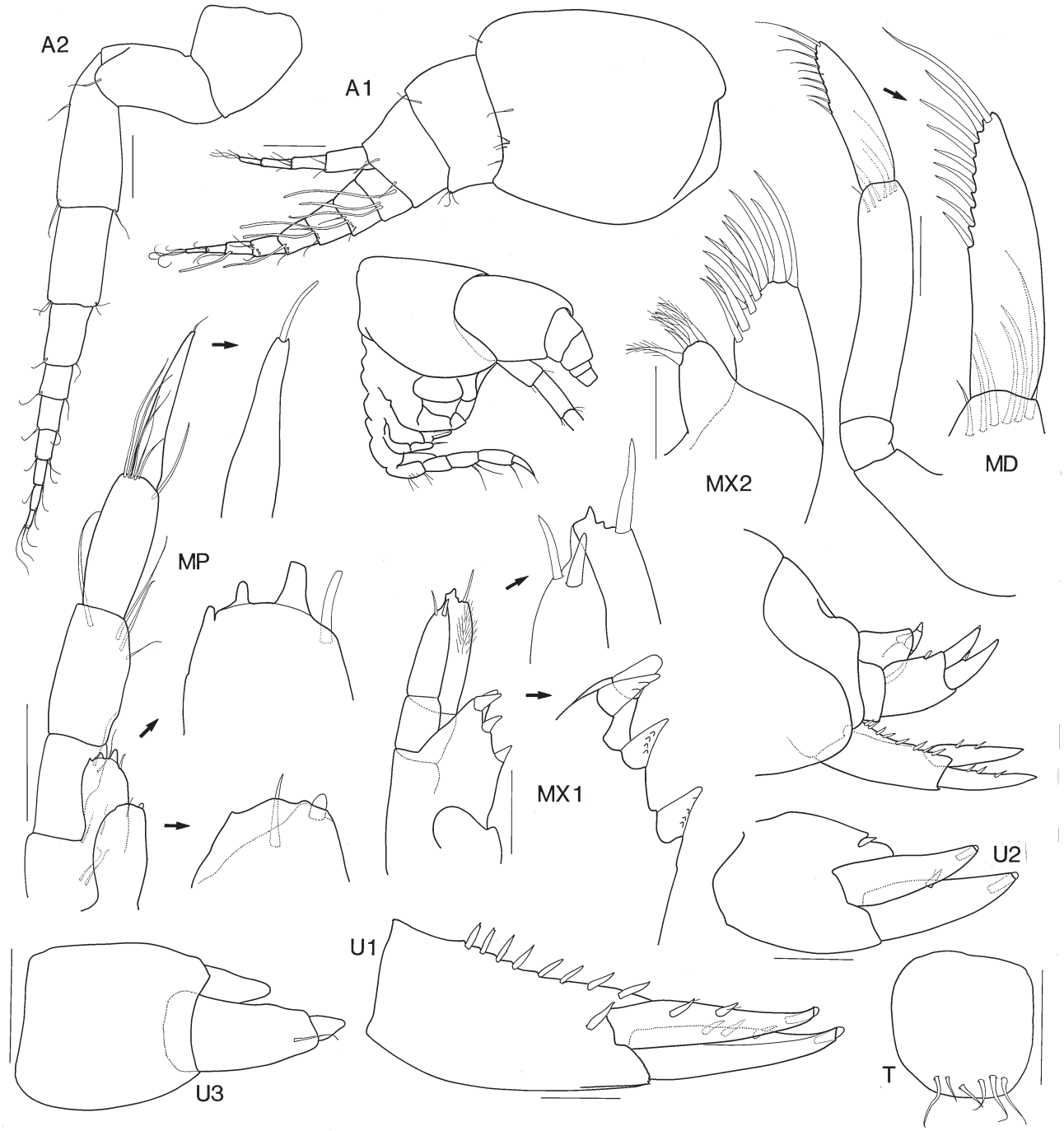

FIGURE 17. *Kerguelenia kanowna* **sp. nov.** Holotype female, MV J61505, south of Point Hicks, Victoria. Scales for MD, MX1, MX2, U3, T represent 0.05 mm; remainder represent 0.1 mm.

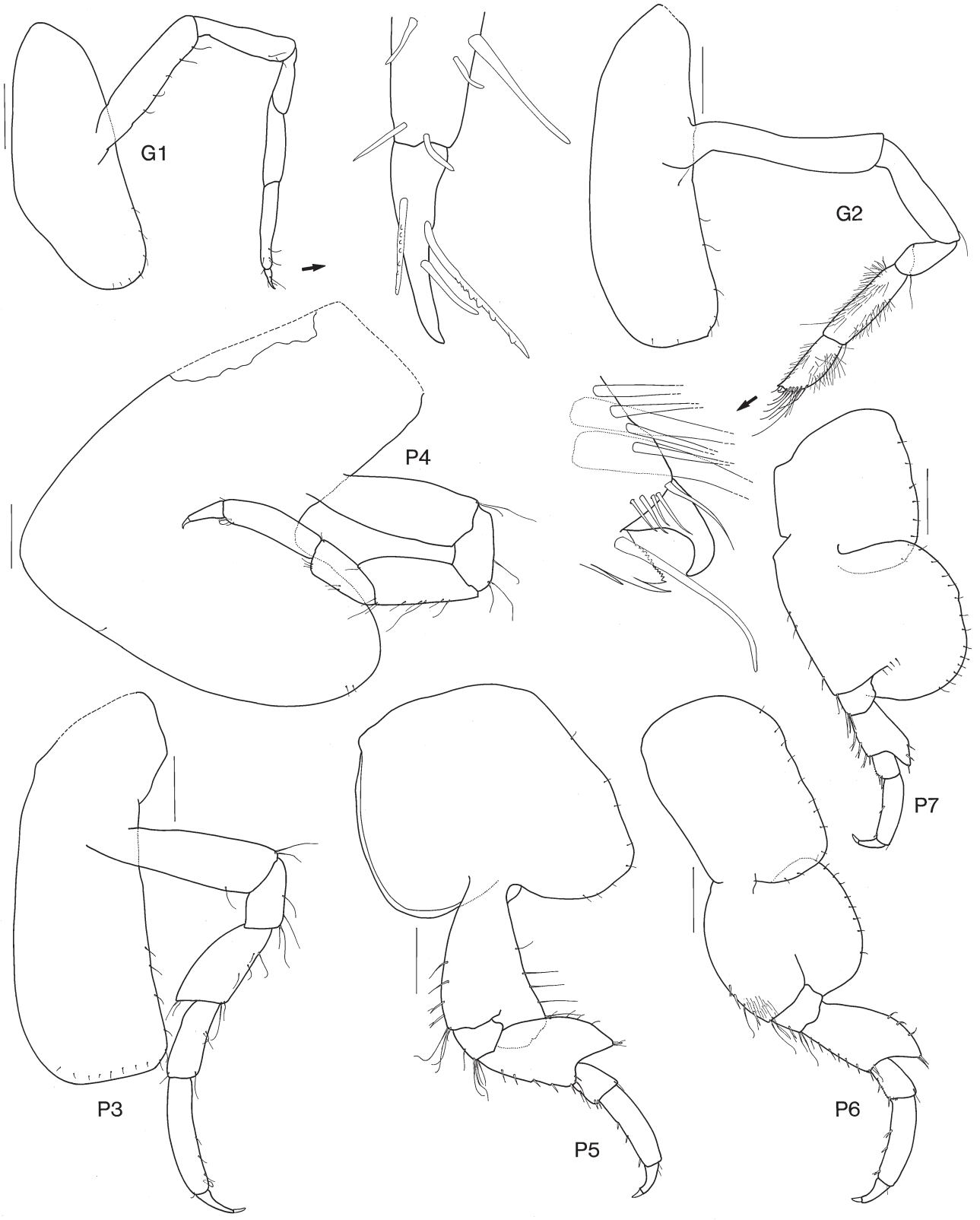

FIGURE 18. *Kerguelenia kanowna* **sp. nov.** Holotype female, MV J61505, south of Point Hicks, Victoria. Scales represent 0.1 mm.

***Kerguelenia kawatiri* sp. nov.**
(Figs 19–21)

Type material. HOLOTYPE, female, 3.5 mm, AM P.69010, east of Cape Naturaliste, Tasmania, Australia, 40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E, 2400–2500 m, mud and clay, 10 December 1986, R.T. Springthorpe, RV *Franklin* stn FR1086-04.

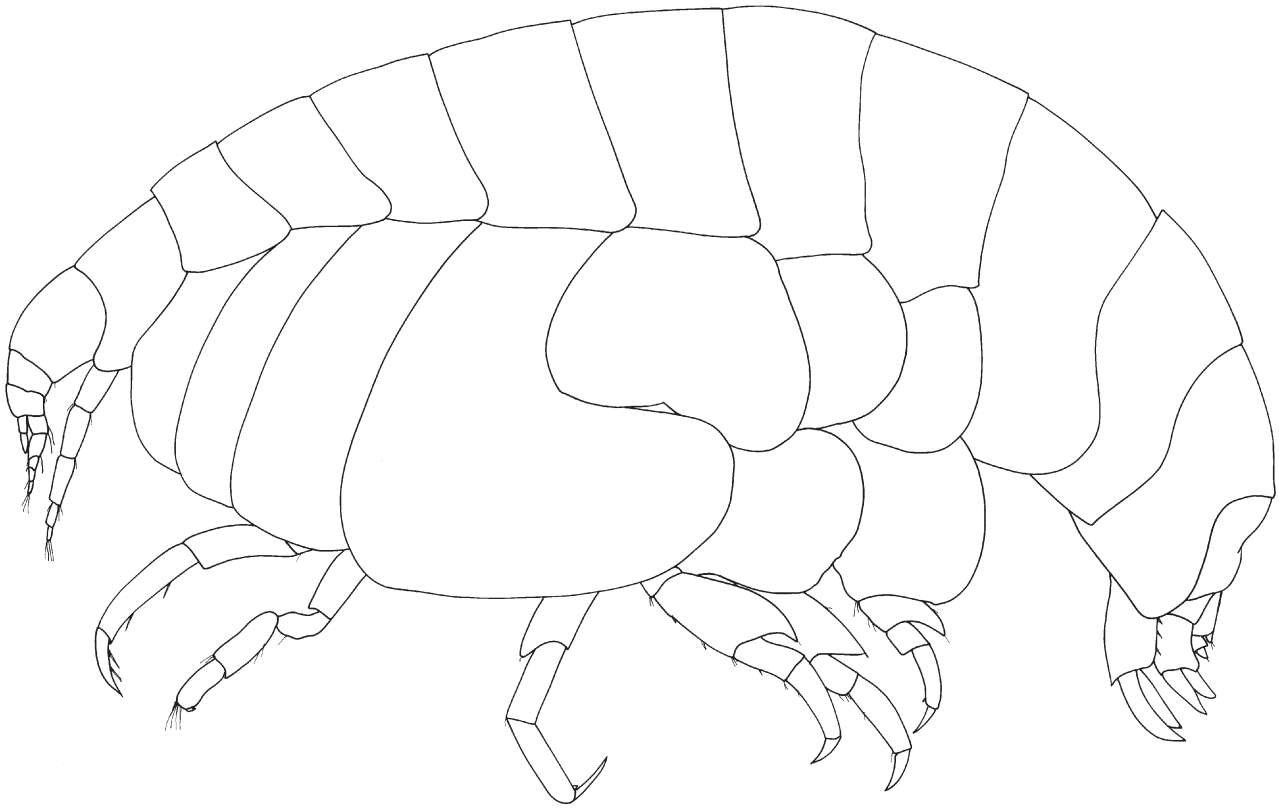

FIGURE 19. *Kerguelenia kawatiri* **sp. nov.** Holotype female, AM P.69010, east of Cape Naturaliste, Tasmania.

Type locality. East of Cape Naturaliste, Tasmania, Australia, 40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E, 2400–2500 m depth.

Etymology. Named for the steamship *Kawatiri*, wrecked in 1907 while trying to enter Macquarie Harbour through Hells Gates in Tasmania.

Diagnostic description. ***Antenna 1*** **peduncular article 1 not or only slightly produced dorsodistally**. *Mandible* incisor absent; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 5 setal-teeth, setal-teeth without cusps; palp 2-articulate. *Maxilliped* palp article 2 longer than broad, length 1.8 x breadth. *Gnathopod 1* basis margins subparallel; ischium very long, length 4 x breadth; carpus very long, length 4.3 x breadth, subequal to (1 x) propodus; propodus tapered distally, length 5 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis linear**, without posteroventral lobe; merus moderately expanded posteriorly. *Pereopod 7* basis with posteroventral lobe extending about halfway along merus; merus posteroventral lobe extending more than halfway along, but not beyond, carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner subquadrate. *Uropod 1* rami without robust setae. ***Uropod 3*** **uniramous**; **outer ramus 2-articulate**. *Telson* shorter than broad, length about 0.9 x breadth.

Remarks. *Kerguelenia kawatiri* belongs to a group of species (*K. antarctica*, *K. compacta* and *K. macropoda*) in which the basis of pereopod 5 is linear and uropod 3 is uniramous. It can be distinguished from *K. antarctica* by the absence of any dorsodistal production on peduncular article 1 of antenna 1; and from the other two species by the presence of a minute second article on the ramus of uropod 3.

The holotype female has an oostegite on pereopod 5 only.
Distribution. South-eastern Australia, in 2400–2500 m depth.

FIGURE 20. *Kerguelenia kawatiri* **sp. nov.** Holotype female, AM P.69010, east of Cape Naturaliste, Tasmania. Scales for MD, MX1, MX2, U3, T represent 0.05 mm; remainder represent 0.1 mm.

***Kerguelenia leura* sp. nov.**
(Figs 22–24)

Type material. HOLOTYPE, female, 3.5 mm, MV J61507, off Freycinet Peninsula, Tasmania, Australia, 42°2.20 'S 148°38.70'E, 800 m, coarse shelly sand, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.*, RV *Franklin*, stn SLOPE 45.

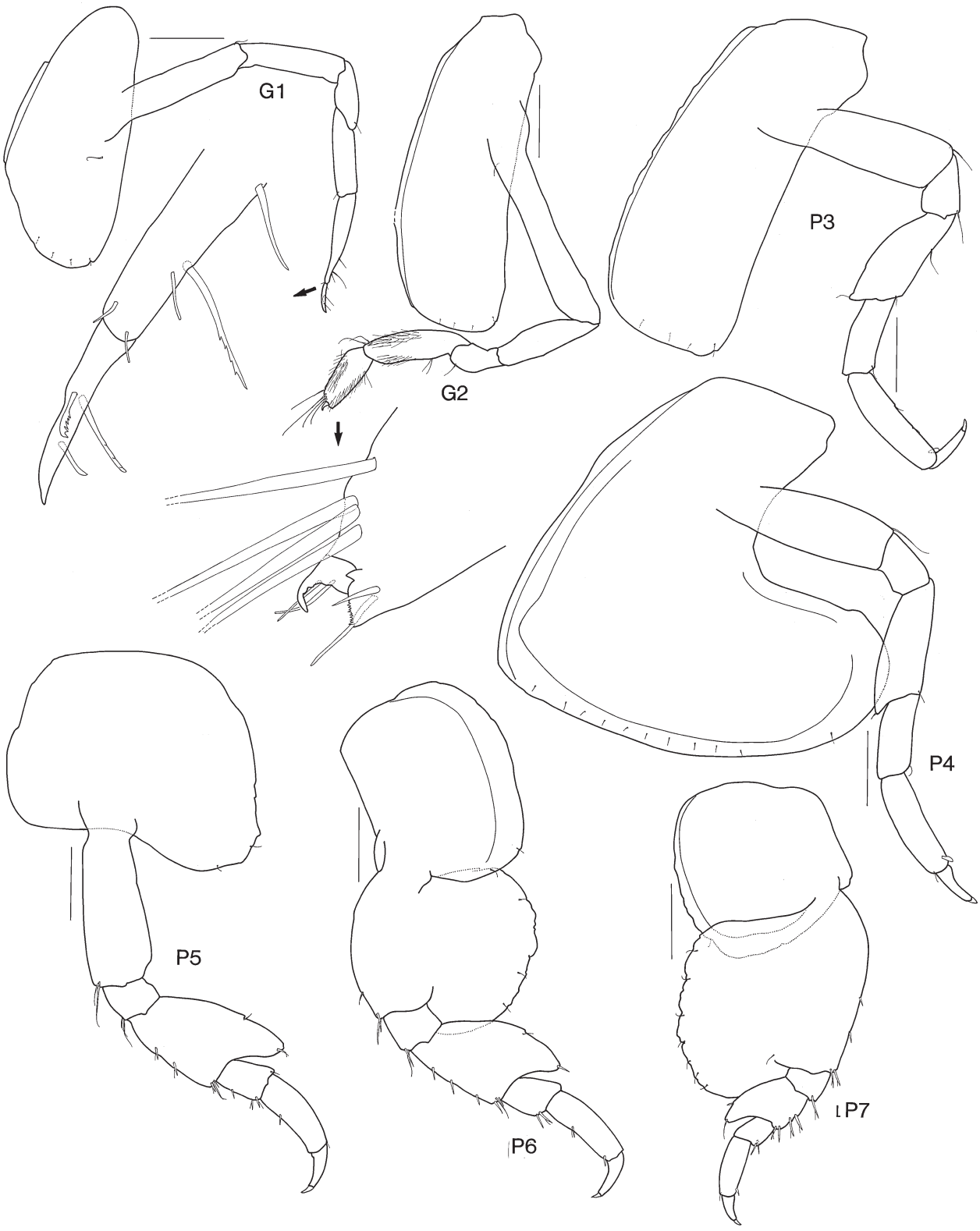

FIGURE 21. *Kerguelenia kawatiri* **sp. nov.** Holotype female, AM P.69010, east of Cape Naturaliste, Tasmania. Scales represent 0.2 mm.

Type locality. Off Freycinet Peninsula, Tasmania, Australia, 42°2.20 'S 148°38.70'E, 800 m depth.

Etymology. Named for the steamship *Leura* which was wrecked near Little Betsey Island, Tasmania in 1886.

Diagnostic description. *Antenna 1* peduncular article 1 not or only slightly produced dorsodistally.

Mandible incisor absent; left lacinia mobilis absent; accessory spine row absent; molar absent. *Maxilla 1* outer plate with 5 setal-teeth, setal-teeth without cusps; palp 2-articulate. ***Maxilliped*** **palp article 2 longer than broad**, length 1.9 x breadth. ***Gnathopod 1*** basis margins subparallel; **ischium very long**, length 4.4 x breadth; carpus long, length 3.9 x breadth, subequal to (0.9 x) propodus; propodus tapered distally, length 4.6 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis expanded posteroventrally**, with posteroventral lobe; merus moderately expanded posteriorly. *Pereopod 7* basis with posteroventral lobe extending about halfway along merus; merus posteroventral lobe extending more than halfway along, but not beyond, carpus. *Pleonite 3* without dorsodistal boss. *Epimeron 3* posteroventral corner broadly rounded. ***Uropod 1*** **rami without robust setae**. ***Uropod 3*** **biramous**; inner ramus about 0.5 x outer ramus; outer ramus 2-articulate. *Telson* shorter than broad, length about 0.7 x breadth.

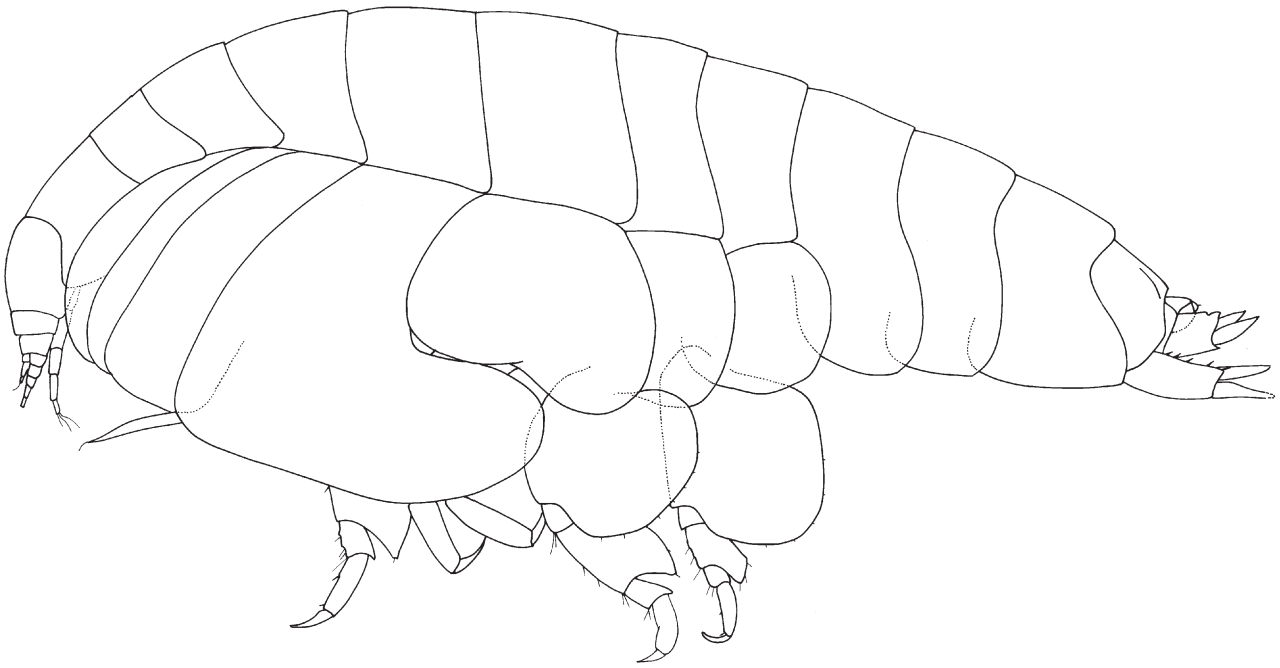

FIGURE 22. *Kerguelenia leura* **sp. nov.** Holotype female, MV J61507, off Freycinet Peninsula, Tasmania.

Remarks. *Kerguelenia leura* belongs to a group of species (*K. antiborealis, K. japonica, K. kanowna* and *K. palpalis*) in which the basis of pereopod 5 is expanded posteroventrally, antenna 1 peduncular article 1 is not or only slightly produced dorsodistally and uropod 3 is biramous. It can be distinguished from *K. palpalis* by the longer than broad article 2 of the maxillipedal palp and from the other species in the group by the lack of robust setae on the rami of uropod 1.

The non-ovigerous holotype female has an oostegite on pereopod 5 only.

Distribution. South-eastern Australia, in 800 m depth.

Kerguelenia matilda **sp. nov.**
(Figs 25–27)

Type material. HOLOTYPE, sex not known, probably female, AM P.69012, east of Cape Naturaliste, Tasmania, Australia, 40°45.94’S 149°01.62’E to 40°46.54’S 149°00.27’E, 2400–2500 m, mud and clay, 10 December 1986, R.T. Springthorpe, RV *Franklin* stn FR1086-04.

Type locality. East of Cape Naturaliste, Tasmania, Australia, 40°45.94’S 149°01.62’E to 40°46.54’S 149°00.27’E, 2400–2500 m depth.

Etymology. Named for the wooden schooner *Matilda* driven ashore in the Furneaux Group during a gale.

Diagnostic description. ***Antenna 1*** **peduncular article 1 produced dorsodistally, extending beyond peduncular article 2, apically subacute**. *Mandible* incisor absent; left lacinia mobilis absent; accessory

spine row absent; molar absent. *Maxilla 1* outer plate with 5 setal-teeth, most setal-teeth cuspidate; palp 2-articulate. ***Maxilliped*** **palp article 2 longer than broad**, length 1.5 x breadth. *Gnathopod 1* basis margins subparallel; ischium long, length 3 x breadth; carpus long, length 3.3 x breadth, subequal to (1.1 x) propodus**;** propodus tapered distally, length 3.2 x breadth. *Pereopods 3 and 4* propodus with short distal locking seta. ***Pereopod 5*** **basis expanded posteroventrally**, with posteroventral lobe; merus moderately expanded posteriorly. ***Pereopod 7*** **basis with posteroventral lobe extending about halfway along merus**; merus posteroventral lobe extending more than halfway along, but not beyond, carpus. *Pleonite 3* with rounded dorsodistal boss. *Epimeron 3* posteroventral corner broadly rounded. *Uropod 1* rami with robust setae. ***Uropod 3*** **biramous**; inner ramus about 0.5 x outer ramus; outer ramus 2-articulate. *Telson* about as long as broad, length about 0.9 x breadth.

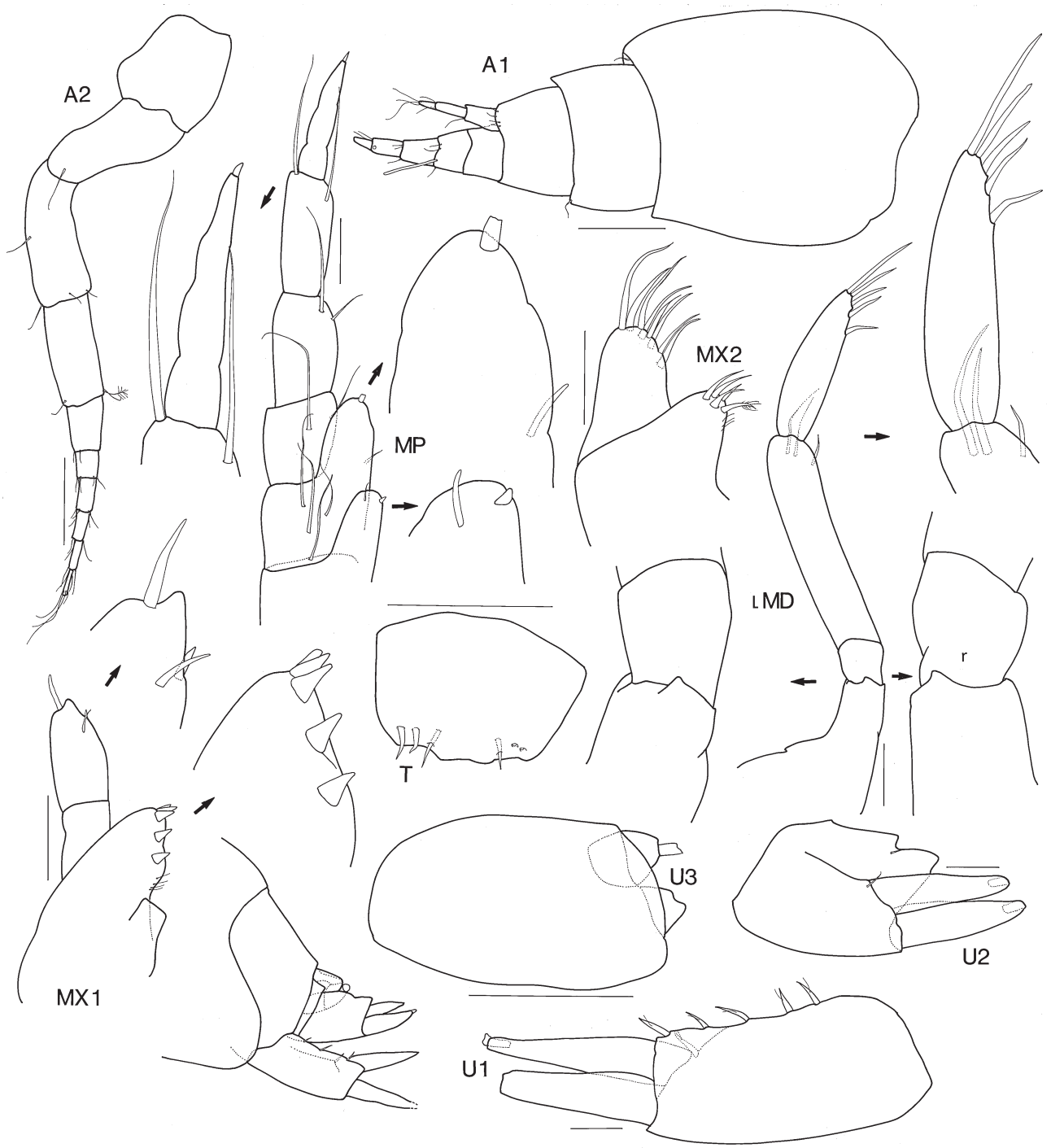

FIGURE 23. *Kerguelenia leura* **sp. nov.** Holotype female, MV J61507, off Freycinet Peninsula, Tasmania. Scales for A1, A2 represent 0.1 mm; remainder represent 0.05 mm.

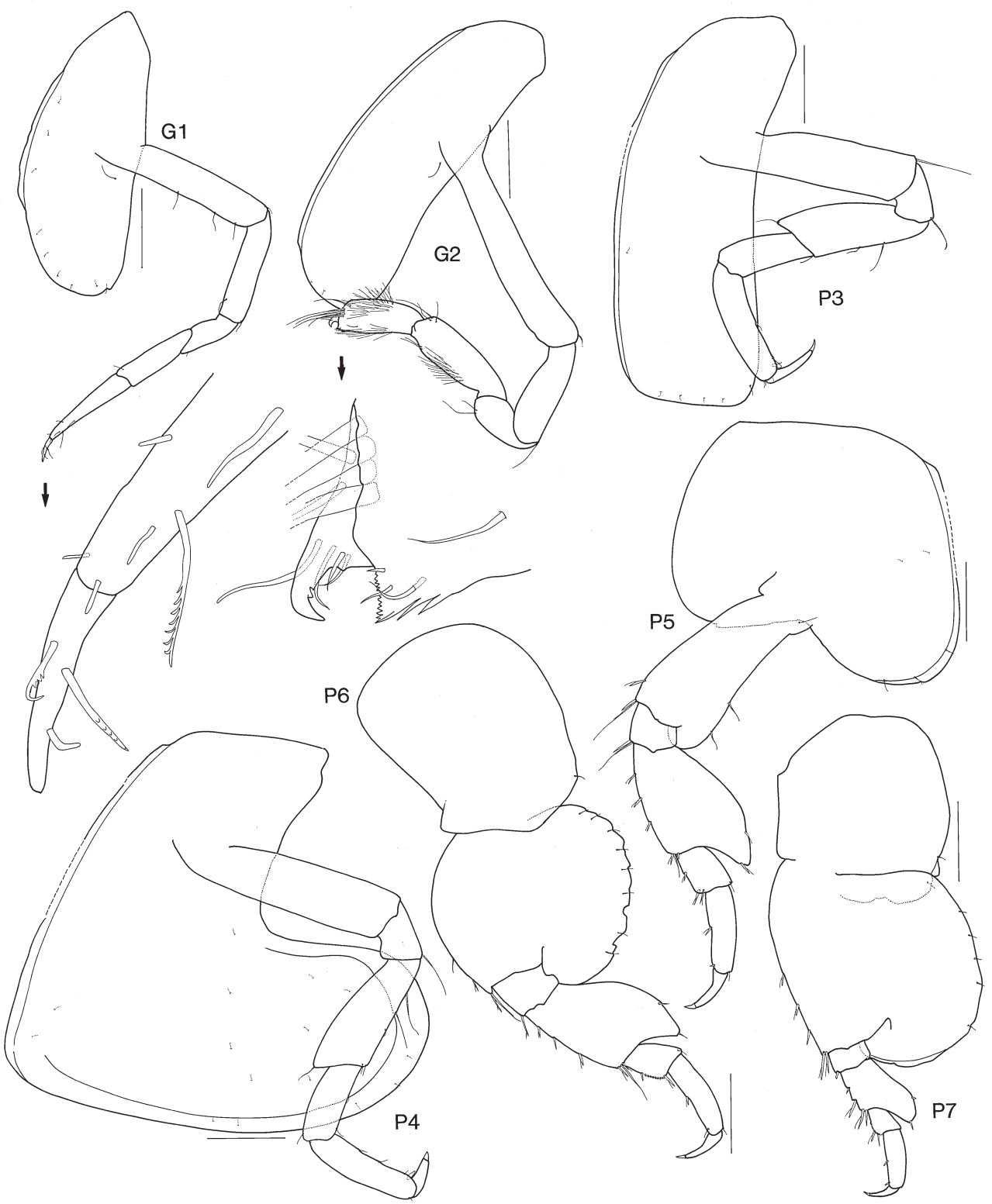

FIGURE 24. *Kerguelenia leura* **sp. nov.** Holotype female, MV J61507, off Freycinet Peninsula, Tasmania. Scales represent 0.1 mm.

Remarks. *Kerguelenia matilda* shares the character of a strongly produced dorsodistal lobe on peduncular article 1 with *K. adeliensis* and *K. antarctica*. Uropod 3 is biramous in both *K. adeliensis* and *K. matilda*, but *K. matilda* is easily distinguished by the subacute shape of the antenna 1 lobe.

Distribution. South-eastern Australia, in 2400–2500 m depth.

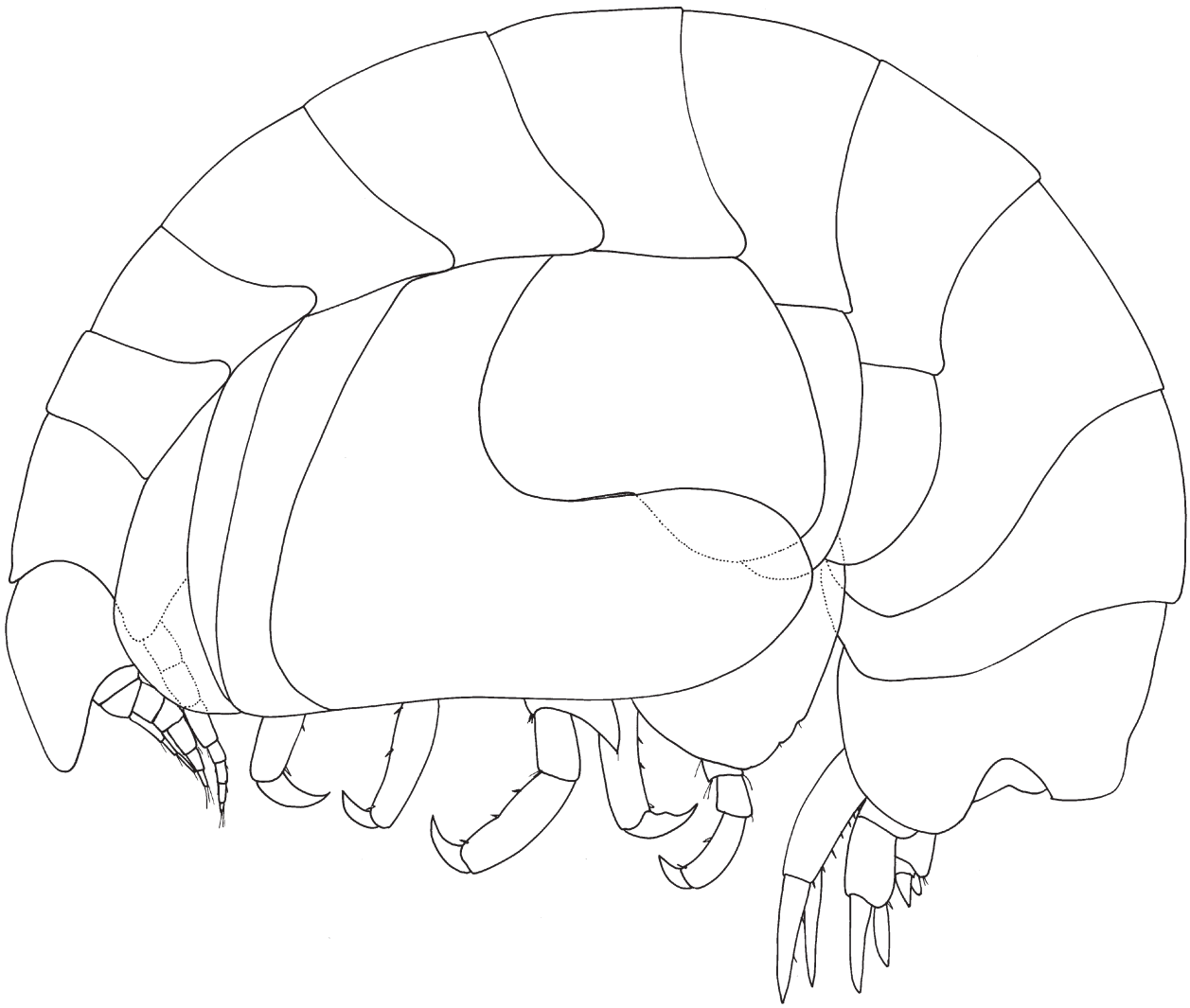

FIGURE 25. *Kerguelenia matilda* **sp. nov.** Holotype female, AM P.69012, east of Cape Naturaliste, Tasmania.

Acknowledgements

We thank Gary Poore (Museum Victoria), for the loan of material; Kate Dempsey for illustrations; and Roger Springthorpe (Australian Museum) for producing our plates. This work was supported by a grant from ABRS which allowed HES to participate in the project.

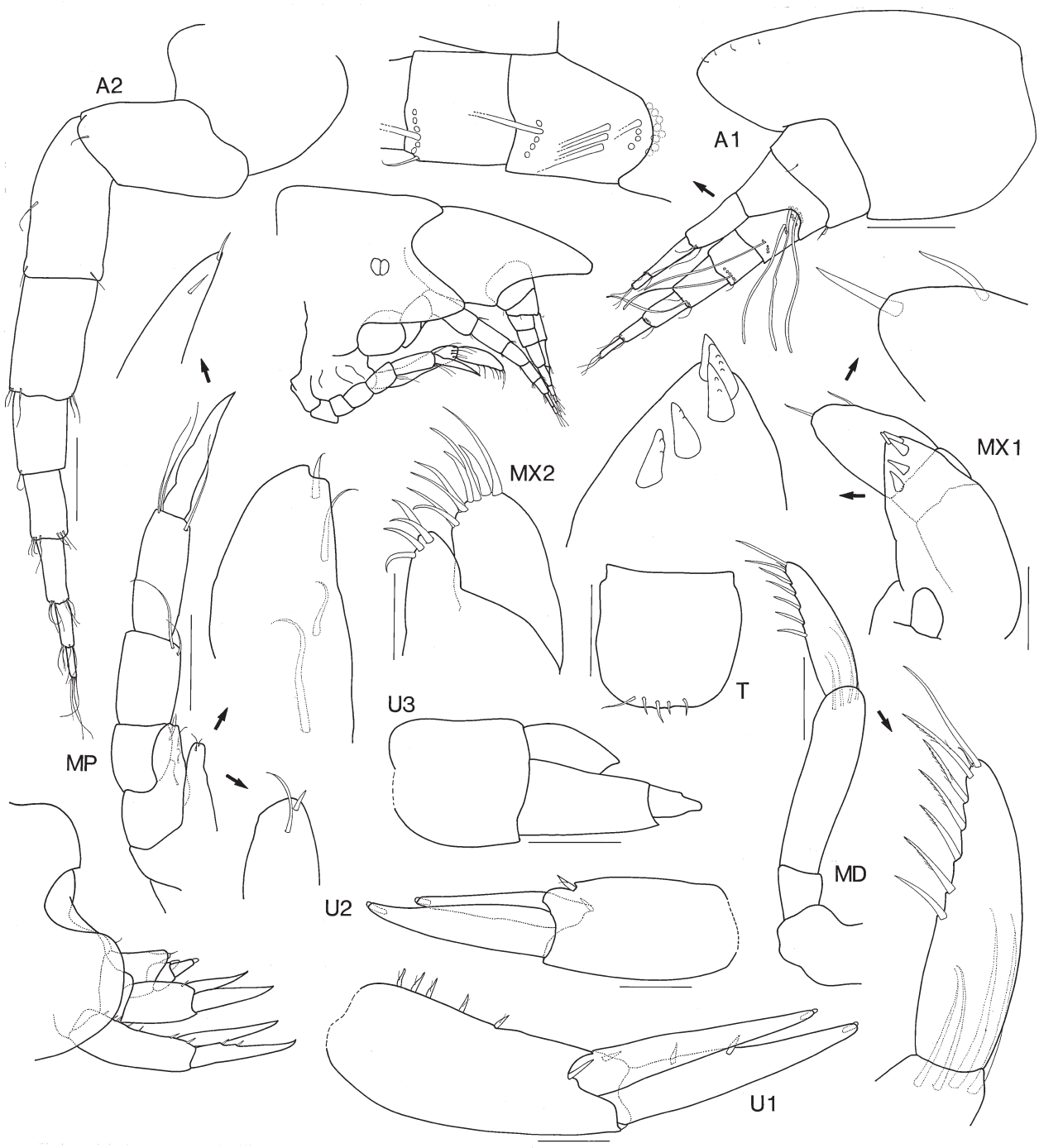

FIGURE 26. *Kerguelenia matilda* **sp. nov.** Holotype female, AM P.69012, east of Cape Naturaliste, Tasmania. Scales for MX1, MX2, U3, T represent 0.05 mm; remainder represent 0.1 mm.

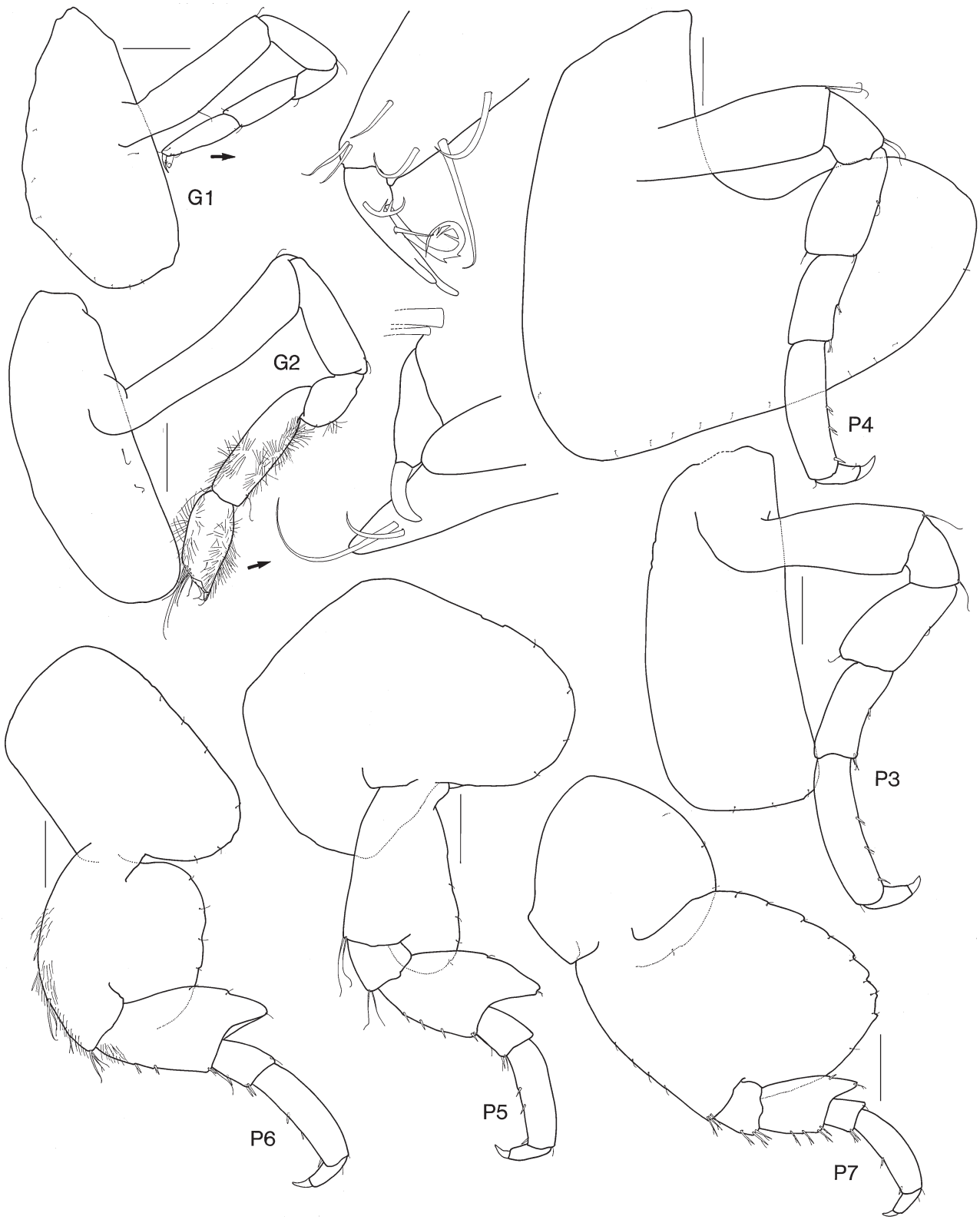

FIGURE 27. *Kerguelenia matilda* **sp. nov.** Holotype female, AM P.69012, east of Cape Naturaliste, Tasmania. Scales represent 0.2 mm.

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